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ABSTRACT

The 35 articles represent presentations made during a conference on improving services to deaf-blind/multihandicapped individuals in residential facilities. Among entries are the following titles and authors: "Federal Thrust of Deaf-Blind Multihandicapped Funding" (J. Franklin); "Prevocational Training for Deaf-Blind (A Research Endeavor)" (J. Caples); "A Semi-Automated Approach to Increasing Work Behavior for Deaf-Blind, Multihandicapped" (J. Kleiss); "A Demonstration Program for Preparing the Multihandicapped for Vocational Training" (M. Barrera and M. Hughes); "Electronics in Habilitation and Rehabilitation--The Concept of a Training Resource Center" (A. Yoncvitz); "A Modified Optometric Evaluation of the Multihandicapped Child" (R. Kaplan); "A Model for Home Training in Residential Program for Multihandicapped Children" (E. Clark and J. Cox); "Personal Experiences of the Mother of a Handicapped Child" (G. Rutherford); "Starting a Classroom with Severely Retarded, Multihandicapped Children--Yes! It's Possible" (J. Livermore, et al.); "The Behavioral Characteristics Progression System as an Assessment Programing Tool for the Multihandicapped" (J. Lamphere); "Case Study of a Multihandicapped Child in a Complex Matching Task" (S. Robinson); and "Implementing Programs for the Multihandicapped Retardate in a Residential Facility" (J. Kartye). (SBH)

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IMPROVING SERVICES TO DEAF-BLIND/ MULTIHANDICAPPED INDIVIDUALS IN RESIDENTIAL FACILITIES

June 10-11, 1976

Richmond State School
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INTRODUCTION

The articles in this proceedings represent presentations made during a conference on Improving Services to Deaf-Blind/Multihandicapped Individuals in Residential Facilities, held June 10-11, 1976, on the campus of Richmond State School. The proceedings has been published with the hope of further sharing of techniques and ideas among staff in other residential settings and in day programs for the multihandicapped as well.

The articles appear in the proceedings in the order in which the presentation appeared on the printed agenda at the time of the conference.

FEDERAL THRUST OF DEAF-BLIND MULTIHANDICAPPED FUNDING

Jatis Franklin

In 1963, 1964, and 1965, an estimated 20,000 to 30,000 children were affected by the German measles epidemic which swept the nation. The result was a sharp increase in multiply handicapped children, many of whom had combinations of auditory and visual impairments, as well as other handicapping conditions that caused difficulties in mobility and learning.

Almost 10 years have passed since the Federal Deaf-Blind Program had its beginning in 1968 when President Lyndon Johnson signed Public Law 90-247 and amended Title VI of the Elementary and Secondary Education Act to include provision for the development of comprehensive regional centers for deaf-blind children.

The Bureau of Education for the Handicapped recognizes that the restoration of deaf-blind children to society is part of the great challenge of fulfilling the nation's commitment to educate more than 8,000,000 handicapped children. In September of 1969, eight deaf-blind centers with a total budget of $1 million were initiated and planning began for implementation of services to deaf-blind children in the nation. Much has been accomplished since that time. There are now 10 Regional Deaf-Blind Centers in operation, with a budget of $16 million, which serve some 5,200 deaf-blind children in all 50 states and U.S. territories.

The Deaf-Blind Program has set forth certain goals which hopefully will be accomplished for all deaf-blind children. These goals are as follows:

1. To assure that every deaf-blind child will receive appropriate and effective educational and training services; diagnostic and evaluative services; and ancillary services beginning as early as feasible in life to enable them to achieve their full potential for communication with, and adjustment to, the world around them, for useful and meaningful participation in society and for self-fulfillment.
2. To assist state, public and private agencies in developing and providing the appropriate educational, training, and consultative services to deaf-blind children and their families.
3. To assure that every eligible deaf-blind child who leaves school has the opportunity to receive appropriate habilitation or rehabilitation services and job training and assessment available through the National Center for Deaf-Blind Youths and Adults and/or other state or local agencies.

4. To assure that all deaf-blind children in school programs of education and/or training have the benefit of trained teachers and other related staff competent in those skills required to aid children in reaching their full potential.

5. To fund all state education agencies which have developed comprehensive state plans and legislation which mandates services to meet the needs of all deaf-blind children in their state.

The Deaf-Blind Program will continue to provide full-time educational services for all deaf-blind children who can benefit from such services in residential and day school facilities and institutions for the retarded. Diagnostic evaluation and educational assessment services, as well as periodic assessment, will be provided to all deaf-blind children who are in need of such services. To insure quality staffing of these programs, inservice and preservice training will be provided to aides and teachers on an ongoing basis.

The John Tracy Clinic Home Correspondence Course provides family counseling for some 3,000 parents. These parents come from all parts of the country.

One of our newest thrusts in the deaf-blind program is prevocational planning. Many of our deaf-blind children are capable of some type of prevocational and vocational training and we must start now! Several years ago, any employment of a deaf-blind person was considered remarkable. However, looking at the number of deaf-blind persons who are gainfully employed today we cannot help but recognize that vocational training is indeed possible and imperative for our children today.

Each of the 10 Regional Centers is responsible for the development of individual instructional or prescribed plans for each deaf-blind child. To assist in this national task, a joint effort between the Texas Regional Resource Center and the Texas Education Agency Deaf-Blind Center was undertaken to gather data on individual service plans currently being developed for deaf-blind and other severely handicapped children. Regional centers are responsible for assisting state education agencies in the development of appropriate state plans to assure the provision of meaningful, relevant, and ongoing services throughout the lifetime of the deaf-blind person.

Many valuable materials such as proceedings of workshops, training video tapes, curriculum developed by various programs and assessment procedures have been developed by the Deaf-Blind Centers. A master listing of all such materials has been compiled and distributed to programs throughout the country.

More than 1,200 personnel in the deaf-blind program under Title VI-C have received some type of training. The kinds of training provided are short-term teacher training, which is provided to professionally qualified teachers for at least one week per year; long-term teacher training, which is provided for at least two weeks per year; short-term aide training, which is for qualified teacher aides; and initial aide training, which is intensive training in the education of deaf-blind children provided to aide aspirants prior to initial work as teacher aides.

Encouragement of the awareness of the needs of severely handicapped and multihandicapped children has been a basic role of the Bureau of Education for the Handicapped. As expressed in an objective adopted in 1974, the goal is "to enable the most severely handicapped children and youth to become as independent as possible, thereby reducing their requirements for institutional care and providing opportunity for self-development."

One of the early efforts of a task force created to develop strategies for achieving this objective was to formulate a working definition for the specific population involved. Ultimately, the members of the group agreed upon the following: "Those children who because of the intensity of their physical, mental, or emotional problems, or a combination of such problems, need educational, social, psychological, and medical services which will make it possible for them to maximize their full potential for meaningful participation in society and for self-fulfillment." In practice, that would include such children as those with severe speaking and language deficits; those whose responses to sight, sould, and touch are minimal; those who may viciously strike themselves, gouge their eyes, or otherwise abuse their bodies; or those who have severe temper tantrums. Also included are youngsters who are so fragile physically that their lives are in constant jeopardy.

The BEH task force estimated that the number of such severely handicapped children and youth was almost 1.5 million, including more than 460,000 severely to profoundly retarded, 41,000 severely multihandicapped, and approximately 900,000 seriously emotionally disturbed autistic or schizophrenic. In short, the number of severely handicapped youngsters needing specialized services is staggering, requiring not only Bureau leadership in launching a national campaign, but the vigorous participation of local, state, and private agencies as well.

It is becoming more evident to parents, educators, friends, neighbors, employers, and perhaps to the general public that something can be done for the severely handicapped, and what is even more important, that the severely handicapped can do something for themselves if they are provided appropriate educational services. Estimates are that by 1980, more than 40,000 severely handicapped children and youths will be receiving those services through federally sponsored programs, but with 1.4 million youngsters involved, there must be even greater activity on the part of state and local agencies. That added dimension is both the challenge and the promise of Public Law 94-142 and its mandate that states develop comprehensive programs for all handicapped children, with severely handicapped children being given a priority status.

Meanwhile BEH will provide stimulation to state and local efforts by continuing to fund exemplary projects for severely handicapped children and their parents, by providing technical assistance for programs under way, and by seeking to bring together those knowledgeable in this field to share insights and facilitate greater accomplishments among the increasing number of agencies, in the increasing number of areas that are playing a role.

In this expanding effort, cost represents a major source of concern. For the most severely handicapped, those needing extensive services of psychiatrists, physical and occupational therapists, social workers, parents, counselors, and educators highly trained in child growth and development, the cost of each child may reach more than $18,000 each year. Included in that figure, however, are quite heavy investments in the development of new methods, equipment, and materials; with the increased replication of exemplary models such as those BEH is funding, expenditures doubtlessly can be appreciably reduced. Some of the development centers have designed effective programs costing less than $3,300 yearly for each child. Other program models have shown how volunteers and parents can become competent specialists with the children, under the encouragement and direction of qualified educators.

Such considerations aside, however, the issue is not simply one of money, though much needs to be done to find ways to reduce the costs of programs and facilities for severely handicapped youngsters. We must consider that human beings are involved--human beings who were once rejected as uneducable and who are demonstrating today that with the proper kind of training they can lead satisfying, dignified lives. For that kind of accomplishment it would be difficult to imagine a price that was too high.

The trend in education for the handicapped today is to provide the greatest possible educational services in the least restrictive environment. We recognize that for many years there will undoubtedly be a need for extreme care crisis type placements, but even in these the greatest effort can be expanded for most effective interventions. We want to insure that every child has a fair chance at some type of education.

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TEXAS SCHOOL FOR THE BLIND, DEAF-BLIND PROGRAM

Nancy Messenger

In 1972 the Texas School for the Blind, under the direction of the Texas Education Agency, established a residential educational program for deaf-blind children. This program, part of the Texas School for the Blind, is located on a separate campus at 3710 Cedar Street in Austin, Texas. After extensive renovation is completed, the facility will serve 40 children if funds are available for staff; 24 students are currently being served. After renovation, depending on staff available, as many as eight children may be enrolled each year until the enrollment reaches 40.

Goal

This program is educational, not custodial. Its goals are to help each child reach his potential for independence, to keep families and children together by helping them learn to communicate with each other, and to help the family learn how to teach the child. The program may prepare a child for enrollment in a suitable program in his home area or for possible enrollment in the deaf or the blind school. This program currently enrolls students at age 6 and may continue to serve them until age 21, depending on individual need. Most of the students are now 10 or 11 years old. The oldest student is 13.

Admission Requirements

The school program is designed to serve children who are so severely handicapped in the areas of sight and hearing that they cannot function in a school for the blind or a school for the deaf. It serves children who are not receiving adequate educational services where they now live. It does not currently serve children from Austin, Houston, Dallas, or San Antonio. The program requires that each student have an interested, cooperative family which will agree to participate in the school's parental involvement program, and feels it can best serve deaf-blind children by enrolling them at the earliest age possible, which is age 6.

Admission Procedure

The visiting teacher receives referrals from the Texas Commission for the Blind, the Texas Education Agency, other schools, and sometimes from parents. The visiting teacher then visits the home to encourage interested families of eligible children to visit the school. At this initial visit, the children are observed by the school staff and video taped for diagnostic evaluation and educational planning. When an opening occurs, the visiting teacher, instructional supervisor, and the staff make recommendations to the superintendent for approval. Families are then notified about the availability of services for their children.

The visiting teacher works closely with the staff of the Deaf-Blind Department of the Texas School for the Blind, the Texas Commission for the Blind, and the Texas Regional Center for Services to Deaf-Blind to provide appropriate services for deaf-blind children and their families. This teacher visits the home of every student enrolled in our school to assist parents and teachers with home programs and to counsel with parents and offer moral support. This teacher assists other families, through home teaching, to develop self-care and communication skills in their children; helps a family enroll its child in our school; and helps children who are leaving our school adjust to their new schools.

Staff and Program

Teachers and houseparents work in close teamwork to provide consistent educational programming on a 24-hour basis. Individual instructional plans developed by teachers with the help of the child's team and appropriate support staff emphasize communication, daily living skills, good nutrition, healthy eating habits, occupational and physical therapy, developmental gymnastics, behavior management, manual and oral communication, and prevocational skills. Many teachers are using the Van Dijk method sometimes called the "Co-Active Method." Some children are developing preacademic skills in reading, writing, and counting.

The staff works together in a team or group construct setting to develop policies and procedures for the group that will insure consistently effective programs for each individual student.

Inservice training provided by consultants and by our own staff helps make this type of programming possible. It is necessary for this quality of programming to continue. Many staff members work long hours to participate in weekly meetings of each child's teacher and houseparent team, staff meetings, teacher meetings, houseparent meetings, sign language classes, staffings, staff observation between houseparents and teachers, observation in other schools, courses at the University of Texas, participation in special workshops, frequent contact with a psychologist from an outreach team at the Austin State Hospital, and 10 other days of formal inservice training.

The staff consists of:

1 Instructional Supervisor
1 Visiting Teacher
1 Dormitory Teacher
1 Occupational Therapist (half time)
1 Physical Therapist (half time)
1 Dorm Manager
4 Houseparents I
10 Child Care Workers (full time)
8 Child Care Workers (part time)
3 Child Care Workers (11 p.m. - 7 a.m. shift)
6 Classroom Teachers

6 Teacher Aides (Clerk III)
2 Secretaries
2 Maintenance People
1 Janitor
3 Cooks
1 Consultant in Speech and Hearing Therapy (at least 2 hours per week)
3 Nurses
1 Driver

During the hours from 8 a.m. to 3 p.m. the school has a ratio of one adult to two children. From 3 p.m. until bedtime most child care workers are responsible for three children. From 11 p.m. until 7 a.m. two adults are responsible for 24 children. With this staffing pattern, it is almost possible to meet our goal. However, when one staff member is responsible for more than three children at one time, it is difficult to insure more than basic safety, much less give stimulation and guidance for language development, emotional security, and planned activities.

When activities are not planned these children tend to exhibit autistic behaviors or to become destructive. A one adult to one child ratio is required for nonverbal, dependent, self-abusive children. Also, a one adult to two child ratio is required for other more independent children during all their waking hours. We use volunteers to help provide this ratio, but we need more dependable, well-trained volunteers than we have.

Parent Involvement

A unique feature of the program is the involvement of the child's family in his education. The family and student are taught to progress together and are not permitted to grow apart. Parents spend two days at school three times during the year, to learn with their child. The parents work as teacher's aides during their visits, working with their own child and others. This enables them to learn the routine their child is following and to learn specific words their child uses in the school's program of total communication. After each parent visit, the student is sent home for a 10-day visit. Children also spend Thanksgiving, Christmas, spring vacation, and summer holidays at home. Teachers visit their students' homes once a year. Annual progress reports, weekly written communication from the school, frequent snapshots of their child in school activities, and emergency telephone communication are used to keep parents closely informed about their child when they are apart. The visiting teacher coordinates this part of our program.

Caseworkers of the Commission for the Blind help keep the important close ties between home and school by making visits when the children are at home, by visiting the homes when the children are at school, and by visiting the school occasionally. These people have been a great help in arranging for medical treatment when necessary.

Nutrition Program

Many of the rubella children have severe feeding problems. Some of the students now enrolled in our school have eaten nothing but milk from a bottle and baby food for eight years of their lives. Other children would eat only one or two foods, for example white bread and soda water. Some will only eat food that is without lumps. Some only eat a few ounces of food a day.

Some children have the appearance of children suffering from severe malnutrition. Studies done on the students in our school showed that even though the school food may provide the nutrients to meet the average daily requirements and the school lunch program requirements, some of our students cannot eat enough calories to meet these average requirements. The school believes that because these children have severe physical problems, there is a high probability that they may have a higher than average need for some nutrients. Therefore, it is necessary to insure that each bite the child eats contains the most beneficial food possible. To do this, diets must be supplemented with other vitamins and nutrients in a form that can be used efficiently.

Teaching these children to eat as normally as possible can be a slow process which requires patience and consistency from the staff. Meeting individual nutritional needs requires expert help.

This deaf-blind program has provided, and could again provide, the opportunity for children to benefit optimally from a nutrition program based on the philosophy of providing the best possible nutrition according to individual needs.

For two years a nutrition consultant provided by the regional coordinating agency for Deaf-Blind Services in 1972-74 worked closely with the school staff and the school pediatrician to determine the children's needs, how to meet them, to develop wise eating habits, and to develop the children's preferences for nutritional foods instead of nonnutrional fillers.

The parents report improvement in the children's eating habits when they are home for visits. Several parents have begun to use good nutrition at home. Research has shown that optimum nutrition has a positive effect on physical, emotional, and intellectual functioning. The staff feels that this nutrition program had a positive effect on these students in their behavior and general health as well as in their eating habits.

Parents have agreed to pay for vitamin supplements for their children. They have also agreed to let their children participate in an indepth nutritional analysis involving blood tests, urinalysis, hair analysis, and diet histories to determine individual needs. Later the effect of nutrient supplementation on physiology and behavior were evaluated.

Needs

In order to provide a consistent educational program on a 24-hour basis, the Deaf-Blind Department needs more staff members. It must be able to offer an educational program better than that which a child can receive at home. To do this the department needs:

A child care staff ratio of one to two whenever the children are awake and not in the classroom.

A child care staff ratio of one to one for those children who have self-mutiliation habits.

Ability to pay attendants, secretaries, cooks, and janitors more than they now make, since we need to keep the high caliber people we have to teach children in dorm hours.

One more janitor and one more nurse or medical person.

When children are living at home, they can be included in regular trips to the grocery store, service station, and other retail stores. They have opportunities to learn these day-to-day living routines if parents know how to make them aware. To provide stimulating trips to local parks and to provide educational field trips to the degree necessary, the department needs more transportation vehicles and drivers.

Our one visiting teacher was able to visit the homes and counsel the families of only 50 of the more than 400 deaf-blind children in Texas during the year 1973-74. This position needs to be enlarged to include several teams of people who can provide parent counseling services and develop home programs as soon as deaf-blind infants are identified. These people could work with the caseworkers from the Commission for the Blind to provide services at the earliest age possible.

A central diagnostic and evaluation center is needed in the state to assist in the necessary early intervention and to make possible the required repeated evaluation and diagnostic study and follow-up. Staff and facilities must be funded, and money must be provided to enable parents to bring their child and stay each time while the child is being observed and evaluated medically, psychologically and educationally.

Materials and equipment (perhaps on a loan basis) must be provided for use in the home program because most families cannot afford the necessary items (books, videotape viewers, educational toys).

Money is needed to improve our parent education program through the use of telephone photographs, travel to and from school, care of siblings still at home, teacher visitation in the home, books and other educational material, and some way to teach parents sign language.

Glasses and hearing aids are delicate instruments which make it possible for active children to become aware of their world. Most families cannot afford to repair them. Money is needed to provide dental care and maintenance of hearing aids and glasses for needy students enrolled in school. The Commission for the Blind, Medicare, and SSI help some families, but others still need help.

Continuing emphasis on nutrition to optimally meet each child's individual needs will require funding for vitamin supplements, whole grain foods, fresh fruit and vegetables, and guidance from people who are expert in this vitally important field.

Continuing staff inservice training is crucial because the supply of trained people is so inadequate. All the staff members need training in techniques to educate these children. Workshops, interaction with other people in the field, and training in communicating with parents of deaf-blind children have been effective modes of inservice training.

A person qualified in the field of vision training is needed to discover ways to increase the children's use of their residual vision and to teach our staff and others. We have found a very helpful optometrist and some helpful ophthalmologists whom we would like to use regularly.

The department feels that its program has been successful because of the way Mr. Hansen, the superintendent, allowed it to function for the first three years. We hope we can continue to function that way. This year has been different because staff in each area of our school reported directly to a supervisor on the main Texas School for the Blind campus. It has been difficult to maintain unity. Sometimes children's needs were not well met because of decisions that were made in an effort to have our program conform exactly to procedures at the main campus. We would like to be allowed to work as a unit. Our goal to provide consistent 24-hour educational programming requires teamwork from all people who work with our students. Teachers, aides, child care workers, O.T./P.T., nurses, cooks, and maintenance staff need to plan together to coordinate services to meet each student's individual needs. We recognize the need for our program to fit into the larger program of the Texas School for the Blind, but we also need to function in a decentralized administrative manner. We want to remain a deaf-blind unified program rather than be divided into separate areas of school, student-life, food service, medical service, and maintenance service, with most decisions made by supervisors who are very busy and not directly involved with our program.

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LUBBOCK STATE SCHOOL DEAF-BLIND PROJECT

Jim Becton

The Lubbock State School Deaf-Blind Project originated in late spring of Fiscal Year 1974 with its initial funding under Title VI-C. The original proposal was granted for the purchase of equipment necessary to establish a diagnostic deaf-blind classroom.

At that time the administration intended to initiate a classroom to serve clients of the community living in and around Lubbock. The residents of Lubbock State School were to be served secondarily if no clients from the community were available. The classroom was to be diagnostic in nature and provide clients suspected of being deaf-blind a place to be evaluated and, if found to be deaf-blind, a place to have an individualized habilitation plan developed. With the client remaining in the classroom for an average period of 90 days, a comprehensive, detailed plan could be developed outlining various activities and teaching methods applicable to the development of a particular client. This habilitation program was explained to parents and/or guardians, and recommendations for other necessary services to various programs within the community were made.

Funds did not arrive in Fiscal Year 1975 until December. Immediately a search was initiated for a teacher of the deaf-blind. This teacher was not found until March, and the teacher aide was added to the staff in April.

Because services to deaf-blind and training of teachers for the deaf-blind were new in Texas an effort was made to train staff members who did not have a background in deaf-blind as effectively and efficiently as possible. A number of workshops, site visits, and training programs were utilized in the training of the staff the remainder of the year.

Immediate funding was available in July of 1975, providing a continuity to the project which had been lacking in the past. After a conference in late July with the Region Program Director for Deaf-Blind Services, a major program direction change was initiated which placed primary emphasis of the project upon the deaf-blind of Lubbock State School rather than community clients. The rationale behind this decision revolved around the large number of residents of the LSS who were suspected of being deaf-blind and a realization that the community clients would be served by other programs soon to be established.

Because of the severity of the handicaps and the number of staff--one teacher and one aide--the project was limited to only six students at any one time. Five of these positions were established for residents of the Lubbock State School and one was reserved for a community client. These criteria have been carefully followed this year, although seven students were in the project at one time due to a crisis admission from the community.

With the change in direction for this fiscal year the Deaf-Blind Project has a three-fold program. First, medical, social, psychological, and audiological evaluations are provided by the Diagnostic and Evaluation Center of Lubbock State School to all individuals within the case finding area served by the Research and Training Center in Mental Retardation, as well as to residents of Lubbock State School who are suspected to be eligible for services. Ophthalmologicals are contracted with the Tech Medical School for these clients.

The second objective is to provide education and/or training assessment for all clients who are identified as being deaf-blind and who are referred by the Diagnostic and Evaluation Center staffing team and by the interdisciplinary teams of Lubbock State School.

The third objective is to provide daily educational and training programs for deaf-blind clients admitted to the state school for the placement in a deaf-blind classroom.

The program has received referrals on 84 clients, 51 from the community and 33 from the Lubbock State School. All of these referrals are suspected to have visual and auditory handicaps. The majority have received or are scheduled for audiologicals and ophthalmologicals to determine the degree of hearing or vision loss.

Community referrals are admitted to the diagnostic classroom for a 30-day evaluation and assessment. During this time a habilitation plan is made and explained to parents and/or guardians, and inservice for the activites of this plan is conducted for the parents and/or guardians and other individuals involved in the training program, when possible, so they will understand and apply the plan to the client.

Lubbock State School residents admitted to the diagnostic classroom are clients who have been involved in other educational programs of the school. However, their involvement has been token in nature, with 82% of them residing in nonambulatory dorms. Most of their training has been in group programs, within the kindergarten, language, and music therapy program, with individual programming coming from the physical therapist and foster grandparents.

While in the classroom clients are evaluated in the areas of self-help skills, gross and fine motor skills, visual training, auditory training, and prevocational abilities. Classes are from 7 a.m. to 1:30 p.m. five days a week, providing an opportunity each day for training in dressing, two opportunitites daily for skills in eating and toileting, and ample time between meals for training in other areas outlined above.

After assessment is made and an individual habilitation plan is developed, the clients are returned to their home unit for implementation of the comprehensive plan. The existing personnel in dorms and existing programs are utilized with individual inservice for all personnel involved with the client, by the deaf-blind personnel.

The project is making progress by illustrating to the staff of the institution that severely multihandicapped clients can be trained and that there are methods of teaching them. By showing continued progress and helping students obtain skills that were thought unreachable, staff throughout the facility recognize the importance of training for this resident. However, the program does not stop there. Inservice training is given to staff members on the implementation of the individualized plans in order that they continue development of skills and not allow residents to regress. With more time and continued progress, a greater impact will be felt within all programming areas of the institution.

One of the major problems in dealing with clients who are severely multihandicapped is the area of evaluation. Progress is so slow and in many cases so minute that determination of progress is often frustrating and always hard to measure. However, with the advent of Behavior Characteristic Progression (BCP) within all institutions for the retarded in Texas, a tool became available to overcome many of the traditional problems in evaluation of this type resident.

The BCP is the primary tool, but not the only tool, for assessment and programming within the deaf-blind project because it measures certain areas of behavior (strands) that are applicable and also because each item of behavior (characteristic) within these broad areas is broken down into small units and is easily observable and measurable. By obtaining an initial assessment and setting goals (targeting), programming for the next step of development is almost automatically done.

Daily documentations are maintained on each targeted characteristic for each student, in addition to the overall monthly summary and update. Such detailed records prove invaluable in noting small gains and/or regressions and arm the staff with another weapon to use in programming individually.

The data received from the BCP are easily adaptable to develop the habilitation plan written for each student as he/she is returned to existing programs on campus. The BCP is used by all staff on campus and is easily understood by most.

In addition to BCP, periodic video taping is performed on each student in the diagnostic classroom. This provides the staff with an additional tool for assessment that many times is startling when reviewed. Progress is so slow that often it is forgotten what a particular child was able to accomplish upon entry in the classroom, and the video tape serves as a very clear indication of progress. While BCP shows progress on paper, the video tape shows progress more dramatically in picture. For this reason, video tapes also prove very rewarding to staff as well as for evaluations.

Periodic routine updates with the video tape, coupled with the BCP, give staff an up-to-the-minute evaluation of each student and prove exceedingly helpful in the establishment of priority areas for training and for goal setting.

The project is to be continued next year with the same basic objectives of providing assessment to the suspected deaf-blind clients. It will be expanded to provide more followup in staff development. An additional person will be added to the staff to provide closer contact with dorm aides, trainers, teachers, and other personnel, as well as parents, in the most effective ways to reach the clients. Formal inservice training will be provided to parents and staff and these individuals will receive help in their own classrooms, dorms, homes, or wherever they normally work and play with a client.

Clients will also be brought back to the classroom periodically for an update assessment. At this time goals and objectives will be reviewed, modified, or changed to meet their needs, which will prove valuable to individualized program and development.

By providing closer contact with those who work directly with the client and monitoring the program, an understanding of the clients' needs and achievements can become a reality. More progress should be observed on each client.

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PREVOCATIONAL TRAINING FOR DEAF-BLIND
(A RESEARCH ENDEAVOR)

Jeff Caples

The Prevocational Deaf-Blind Project at Richmond State School is a research project funded through the Division of Occupational Research and Development, Texas Education Agency. The project is involved in the completion of six major objectives:

1. Definition of needs for deaf-blind in the area of prevocational training.
2. Establishment of interagency collaboration.
3. Development, implementation, and evaluation of a staff training program.
4. Development, implementation, and evaluation of a prevocational curriculum.
5. Development, implementation, and evaluation of a parent training program.
6. Dissemination of results.

Letters were sent to individuals and agencies throughout the country in an effort to gather information regarding prevocational training for the deaf-blind. The information was reviewed and organized through the use of an information survey form developed by the project staff. This survey was used as a tool in the development of a definition of needs for deaf-blind populations.

Components of the project's staff and a parent training program were made available for use by the multihandicapped project at Richmond State School. This component dealt primarily with behavior analysis and the control of behavior. The prevocational project also developed components dealing with auditory and visual deficits, as well as materials dealing with communication for the multihandicapped child.

These programs were implemented with the staff of Richmond State School and parents of prevocational clients. They were evaluated through the use of objective exams and program evaluation forms.

The project developed a prevocational curriculum containing approximately 65 programs for the deaf-blind individual. The curriculum was implemented with 10 clients of Richmond State School and individuals from the community. All programs were evaluated through the collection and graphical representation of training data.

The project curriculum deals with 10 major areas of emphasis:

1. Reduction of dysfunctional behaviors.
2. Prerequisite training skills.
3. Self-help skills.
4. Communication.
5. Gross and fine motor development.
6. Sensory and conceptual skills.
7. Mobility and orientation.
8. Social and recreational skills.
9. Structured vocational skills.
10. Simulated workshop programming.

A copy of the project's final report is available from:

Oscar Millican
Division of Occupational
Research and Development
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A SEMI-AUTOMATED APPROACH TO INCREASING WORK BEHAVIOR FOR DEAF-BLIND, MULTIHANDICAPPED

Jim Kleiss

A primary concern in any vocational or occupational setting is the maintenance and control of on-task behavior. For this reason, a prevocational program which prepares individuals for these settings should provide training in on-task behaviors. A semi-automated approach was used in order to maximize effectiveness while minimizing the number of staff required to provide adequate training.

Three male, 12-year-old subjects were chosen to receive training in the study carrels. Subject one had a moderate vision loss and a severe hearing loss, subject two had normal vision and a severe hearing loss, and subject three had a severe vision loss and a severe hearing loss. All three subjects had been taught specific tasks to work on in the study carrels, but none had been run on any extended maintenance type schedules.

Training took place in the day room of a currently vacant residential building. The room offered adequate space with good lighting and was relatively free of excessive noise and personnel.

The study carrels themselves had 60" tall partitions on either side of the subject's desk. The back was open to allow free entry, and the front was open to allow the trainer to freely observe each subject while in the carrel. Token dispensers were located on the left wall of each study carrel. A red local timeout light and a white indicator light, which flashed each time a token was dispensed, were mounted on each dispenser facing the subject. Each token dispenser also had a catch box with clear plexiglass sides fastened to the desk top directly underneath. In addition, the seat in each study carrel had a wetness detector attached. The study carrels were arranged in a semicircular fashion facing the control panel.

The control panel was located approximately five feet in front of the study carrels to allow accurate observation of each subject's behavior. Electromechanical counters recorded the number of tokens delivered in each study carrel as well as the number of local timeout sessions. Length of timeout sessions could be altered for each carrel with timers on the control panel. In addition, one electromechanical counter recorded the total number of tokens dispensed and another recorded total timeout sessions. There were also three indicator lights on the control panel which lit up when the wetness detector in the corresponding carrel was activated. A tone mechanism was activated at the same time. One session timer and one interval timer with a tone were also located on the control panel.

Baseline data were recorded for three,15-minute sessions, one per day. Subjects were given a task for which they were previously trained and then were given a signal to begin working. The subjects were then observed for five seconds every 30 seconds. A plus was recorded if the subject engaged in on-task behavior, which was defined as being oriented toward the task with hands involved in task completion. A minus was recorded if the subject engaged in any behavior other than on-task behavior. On-task behavior was graphed as a percentage of the total times each subject was observed.

Training sessions were 15 minutes long and were run once a day. Subjects were, again, observed for five seconds every 30 seconds. If the subject engaged in on-task behavior, a plus was recorded and a token was delivered. If the subject engaged in any behavior except on-task, a minus was recorded with no consequence to the subject. Subjects were given an opportunity to exchange tokens after they had accumulated six. Leftover tokens at the end of the session were exchanged then. The local timeout lights were used in the event of a toileting accident. The criterion for moving to Stage II was three consecutive sessions at 90% or better on-task behavior.

The procedure for Stage II was the same as for Stage I, except tokens were only available every 60 seconds. Observation and data collection continued every 30 seconds. The criterion for moving to Stage III was three consecutive sessions at 90% or better response.

In Stage III tokens were made available every 150 seconds, while observation and data collection continued every 30 seconds. This required the subject to work the entire session before token exchange. The terminal criterion was the same as in previous stages. Modifications could be made to increase the session lengths past 15 minutes if desired.

The data show a rather wide range of variability in all three subjects. All subjects, at one point or another, showed a tendency toward much higher rates of responding than their average baseline rates. This was often followed by a drastic decrease in performance as well. Subject one was the only subject to maintain rates generally higher than baseline. His mean baseline rate was 42% and he only dropped below that on two of 14 sessions. His average rate for intervention was 61%. Subject two's rates were extremely variable, as was his baseline. His mean baseline rate was 43%, while his mean intervention rate was 45%. Subject three showed an initial upward trend, followed by a general decrease in rates. His mean baseline rate was 32% and his mean intervention rate was 41%.

The overall lack of significant results could probably be attributed to the method of reinforcer delivery. Although a time sample is a good method of observing behavior, it results in a fixed interval schedule when used to deliver tokens. A fixed interval schedule of reinforcement does not directly consequate rates of responding or duration of responding. It tends to produce the most responding at the end of each interval rather than the steady, consistent rate desirable in a work situation. By requiring each subject to accumulate six tokens before exchanging, it was hoped that a multiple schedule negating the effects of the interval could be achieved. This did not occur.

Since the subjects had visual and/or auditory impairments, there was also a problem in receiving feedback from the token dispensers when reinforcers were delivered. The subjects received no auditory stimulation when the token dropped, since they were all functionally deaf. Visual stimulation from the signal lights on the token dispensers was severely limited because the subjects were oriented toward their tasks when tokens were delivered.

These problems were taken into consideration and a new method of delivering reinforcers is currently being developed. This will involve training the subjects to push a button, which will register on a counter on the control panel, when they have finished a unit of work. This allows the use of a ratio type schedule, which more directly consequates work behaviors. Ratio schedules tend to produce higher and steadier rates of responding. Buzzers will also be located on the chairs in each study carrel and will provide tactile feedback in the form of vibrations when tokens are delivered.

The timeout lights will also be dropped, since they have not proven to be very useful. The three subjects used in this study were well toilet trained and never had accidents. Seven additional study carrels are also being planned in an effort to increase the overall effect.

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A DEMONSTRATION PROGRAM FOR PREPARING THE MULTIHANDICAPPED FOR VOCATIONAL TRAINING

Manuel Barrera and Melvyn L. Hughes

Project Objectives

The purpose of this project was to provide programming for severely and profoundly retarded clients in prevocational skills. If prevocational skills can be achieved by these clients, then assimilation into vocational settings similar to those currently available for the mildly retarded will be more probable.

The three general objectives of this program were (and still are):

1. To provide an interdisciplinary approach to planning for rehabilitation services for the severely and profoundly retarded clients.
2. To demonstrate that rehabilitation programs can be designed to meet the needs of the severely and profoundly retarded clients in order to "ensure the optimal development or restoration of each client physically, psychologically, socially, and vocationally."
3. To graduate severe and profoundly retarded clients into available rehabilitation programs.

The first general objective was achieved through the nature and makeup of the staff and the interdisciplinary model used for habilitation purposes at the school.

The second general objective was achieved by the readiness program itself. The prevocational readiness program has several measureable objectives, which when met, should give the client the necessary skills to enter the school's regular vocational programs.

Objective #1: Increase on-task behavior to 90% or better on assigned tasks.

Objective #2: Increase instruction-following behaviors to a 90% or better criterion level (This objective is usually combined with objective #1.).

Objective #3: Reduce competing behaviors by 90% or to an acceptable level (determined individually).

Objective #4: Implementation of an incentive system which will facilitate the above objectives and provide a medium for fading the client into the incentive system in effect in the program to which the client will be entering from the readiness program.

The above objectives were achieved through the consistent and systematic use of applied behavior analysis techniques. Staff were thoroughly trained in these techniques and the curriculum was designed to maximize the outcome of these techniques. By using applied behavior analysis the objectives are based on the premise that each client must be dealt with individually and the program fitted to him/her.

The third general objective (to graduate clients into rehabilitation programs) was achieved by meeting previously stated objectives. No set criteria were being put on this objective for one important reason: this project will be performance based and not time based.

A final comment needs to be made concerning the quality of work. It was not the objective of the readiness program that clients be able to perform tasks in extremely accurate fashion, but rather that they work and/or attempt to do the task. Therefore, quality of a client's work was not a primary factor in the readiness program and was delegated to actual rehabilitation programs in the Rehabilitation Center.

Typical Schedule

8:00 - 9:00	Trainer gets physical environment ready for the clients; arrange tasks, data sheets
9:00 - 11:30	Training session
11:30 - 12:00	Token exchange period
12:00 - 1:00	Staff lunch
1:00 - 1:30	Trainer gets physical environment ready for the clients
1:30 - 4:00	Training session
4:00 - 4:30	Token exchange period
4:30 - 5:00	Analysis of data, charting, graphing of data

Training for the clients of this project consists of 6 hours of training per day, 5 days a week, Monday through Friday.

Baseline Procedures and Behavior Definitions

A two-week baseline was conducted on each client who entered the program. Baseline measures were set up to be taken in three areas of behavior; however, the second area of instruction was not implemented:

1. On-task behavior.
2. Instruction following behavior.
3. Competing behaviors.

Tasks which were used in the baseline procedures included, but were not limited to, the following:

1. Nut-bolt assembly
2. Nut sorting by size
3. Bolt sorting by size
4. Color discrimination task
5. Pegs and peg boards
6. Various puzzles
7. Shape discrimination task
8. Stringing beads
9. Pen assembly
10. Packaging loops
11. Geometric shapes

Tasks were randomly chosen, and each youth worked on the task for 30 minutes or until completion. If the task was completed sooner than 30 minutes, the youth was given another task.

On-task Behavior

This was defined as the occurrence or nonoccurrence of certain behaviors at the end of specified time intervals with the interval determined by the initial behavior rate of the student. Specifically, the resident must be in the proper position (usually sitting at his assigned area), working on the appropriate task without extended pauses (5 seconds), and not engaging in behaviors such as day-dreaming, disruptive behavior, or inappropriate verbal behavior. A designated staff member catergorized the resident's behavior at the end of the interval and recorded either a + (on task) or a 0 (off task) on the Daily Data Sheet.

Instruction Following Behavior

This was defined as a set of simple commands verbally presented to the resident during baseline and training sessions. The commands were presented in a structured manner and were not presented randomly. For example, the command "stand up" was only presented when the situation required the client to stand up. After each command-prompt the staff member recorded either a + (client responded within 5 seconds) or 0 (client did not respond within 5 seconds). If a client did not follow the command within 5 seconds the trainer repeated the command and immediately used graduated guidance procedures to teach the client the correct response.

The following set of commands were those used for training. The list was modified as necessary.

1. Sit down
2. Stand up
3. Start work
4. Stop work
5. Close the door
6. Pick up the (small object)
7. Get a chair
8. Come here

All commands were preceded by the resident's first name and given in a clear, loud, pleasant voice. After each correct response, appropriate reinforcement was delivered when applicable. At all times, the staff praised and congratulated the client for following the command, but only at the completion of the command. This also applied to those instances where graduated guidance was used.

Competing Behaviors

This was defined individually for each resident. In essence, a competing behavior was one which interferes with the resident's work task. This category included behaviors such as self-stimulatory behaviors, disruptive behaviors, poor posture behaviors, and verbal misbehavior. Individual treatment programs were developed as necessary for decreasing the frequencies of competing behaviors. In most cases simple overcorrection procedures were used.

Reward System

The readiness program used a token economy to reinforce clients for appropriate behaviors. Residents earned tokens for all targeted behaviors: work rate, on-task behavior, instruction following, and competing behavior (reduction of and/or behavior incompatible with the targeted behavior). Token training took place during the first session with the clients. Procedures were available for teaching the meaning of tokens.

After baseline and pretest measures have been gathered, token delivery will be individualized for each client, and this information will be made a part of each client's record.

Backup reinforcers consist of consumables, toys, games, special activities, and privileges. They can only be purchased during designated exchange periods. At the end of the exchange period all items are put away and/or returned to the token store. Accurate records are kept on all purchases made by each client.

As residents are faded toward one exchange period per day, money and/or canteen cards are substituted as backup reinforcers. As a client nears completion in the readiness program, he is paid money. The process then involves fading the reinforcement schedule so that the client does not receive his/her money until the end of the training session on Friday. Schematically, the reward system is as follows:

Tokens daily (exchangeable for backups) ——→ Tokens (exchangeable for money) ——→ Money daily (used to buy backups) ——→ Money delivered once a week.

If it is not feasible to move the clients to a monetary system, the token program is carried over to the setting the resident is moved into.

Token Training

After completion of the baseline measures, the program goes into token training, which occurs in four stages:

Stage 1

The trainer hands client the token and immediately follows it with a reinforcer. Token is taken back upon the client's receipt of the reinforcer.

Stage 2

The trainer hands the client a token, and with his free hand extended says, "Give me the token and you may have ________ (Reinforcer). Client hands the token to the trainer and the reinforcer, along with social praise, is given to the client.

Stage 3

The trainer hands the client a token and requires the client to hold the token for __________ (length of time designated). At the end of the time period, the trainer extends his hand and says, "Give me the token and you may have the ______________." Client hands token over, trainer praises.

Stage 4

Trainer hands the client a token contingent upon one of the targeted behaviors such as being on task. The trainer says, "This token is for ___________ (behavior the client has completed)." The client can now trade his token for a reinforcer.

This process will be carried out to make sure the clients of the program understand what they may do with the tokens they earn in the program.

Token Program Implementation

With the completion of baseline measures and the token training, the client is moved into the token implementation phase of the project. A typical session will be conducted as follows:

> The client will enter the classroom and be given a task to work on. At the end of each two-minute interval, the trainer will either give the client a token for being on task or withhold the token explaining to the client, " (name) , you are not doing your work." The morning session will last 2 1/2 hours, consisting of 75, two-minute intervals. The client will work on approximately four different tasks per session. The client will also be reinforced with tokens for responding appropriately to instructions. Once the session is completed and the client has earned tokens, he may go to the token store and purchase available items. Once the client masters the two-minute interval, the interval will go to five minutes before tokens are given for appropriate work; from 5 minutes it increases to 10, to 15,, to 30, to 45, to 60 minutes between tokens. At this point the client's schedule can be faded to that used in the sheltered workshop.

This project is designed so that each client's behavior can be compared to preproject intervention. This is, of course, the traditional method used in applied behavior analysis. In general, the program follows an AB design (where A represents baseline conditions and B represents treatment conditions). This project design, therefore, enables the project staff to analyze client performance and determine whether the staff has established any control over the client's behavior.

In order to obtain data that are reliable, certain procedures are implemented. Periodically, reliability tests are made by other persons who will independently observe and record the same target behaviors, and a comparison of this data with that of the trainer will be made. Generally, reliability of 80% or better will be taken as an acceptable measure. When 80% reliability cannot be achieved, data-keeping procedures and definitions will be modified.

All data are plotted on a time line for analysis. By looking at specific time periods, the trainer may compare client performances. The direction of change in performance will be utilized to tell the trainer how well that part of the program is working and whether any changes are needed.

Basically the readiness program is designed to be performance based, as opposed to being time based (This is not to say that time is not important; it will be used to analyze the efficiency of the program.). To be performance based will mean that the client is always right: if the clients' behavior does not change, it is because the project has failed to provide an appropriate environment in which such a change could occur.

Results

Since September 1975, the program has served a total of 15 clients. Six of the 15 have successfully entered the rehabilitation program. The program has also served three clients from the rehab program itself by taking them into the program and developing on-task behaviors.

The individual data gathered demonstrates changes in on-task behavior and reduction of competing behaviors.

Client #1 started the program with an average of 73% on-task behavior. After the incentive system was introduced, on-task behavior quickly increased to above 90%, and over the span of 13 weeks has averaged 88%. The last week it averaged 93%. This client is ready for placement in the workshop. Competing behaviors were reduced from an average of 113 to an average of less than 15 in the last three weeks.

Client #2 averaged 50% on-task behavior before the program started, and after seven weeks was averaging 83% on-task behavior. At the same time, competing behaviors dropped from a mean of 236 during baseline to a total of 116 during the seventh week. No consequences have been applied to the competing behavior.

Client #3 started the program with an average of 60% time on-task, and in the last three weeks of the program has averaged 88%. Competing behaviors dropped from a high of 164 per week during baseline to a low of 25 during the last week of the program. Again no consequences have been applied directly to the behavior.

Client #4 spent only five weeks in the program before being promoted to the workshop. Her baseline on-task behavior averaged 87%, and for the three weeks in the program itself she averaged 95% on-task behavior. Again this client's competing behaviors dropped dramatically without any consequences.

Client #5 was in the program nine weeks before entering the workshop and her on-task behavior increased from a mean of 66% to a mean of 98% in the last three weeks. Another dramatic change occurred in her competing behaviors, as they dropped from a baseline high of 183 to a low of 7 in the last week.

The data of these five clients is representative of all 15 clients served. At this point no special programs or procedures have been introduced to reduce competing behaviors. In addition, six clients currently are awaiting placement in rehab services and the severe-profound unit began two other prevocational programs on two separate dorms. Later this month a second class will begin at the rehab center for our clients.

Discussion

Although only a portion of our program has been presented here, the authors feel that this type of approach to dealing with the multihandicapped has been very successful.

The four objectives--to increase on-task behaviors, to increase instruction following, to reduce competing behaviors, and to implement an effective incentive system--have been accomplished. No data on instruction following have been collected and the reliability checks have been insufficient. These deficiencies will be corrected in the future.

A few problems need to be pointed out. The first is the movement of a client from a more structured environment to a much less structured environment in a rehab workshop. This problem can be dealt with by working closely with the workshop and changing procedures to make the structured environment closer to that of the workshop.

Another problem is finding enough work for clients in the workshop. It is our experience that clients from the structured program tend to be more productive and stay at tasks longer than clients already in the workshop. At times our clients have resorted to inappropriate behaviors in the absence of work.

A serious program area on which we are working is the process of fading to longer intervals before reinforcement is delivered. It is generally felt that we often wait too long before we expand from our intervals. In conjunction with this problem is whether a token system needs to be implemented on each client. In the future we will be modifying the system in order to make this change.

The successes and spin-offs of the program outweigh the problems. Simply having our program in the rehab setting has had demonstrable effects. Rehab staff have responded with such comments as, "I wouldn't have belived it if I hadn't seen it," and "I never thought she would be in this program." It has been an education for all staff.

The results of our program have also produced changes in the workshop program itself. More attention is now given to each client individually and dead time is being programmed for. Staff are learning that it is the environment that needs to be changed in order to train the handicapped.

It was mentioned earlier that the program does not emphasize quality nor quantity and that it was our hope that these aspects of production in a workshop would take care of themselves, and they have. Our clients tend to be more productive and stay at tasks longer than many clients already in the rehab program.

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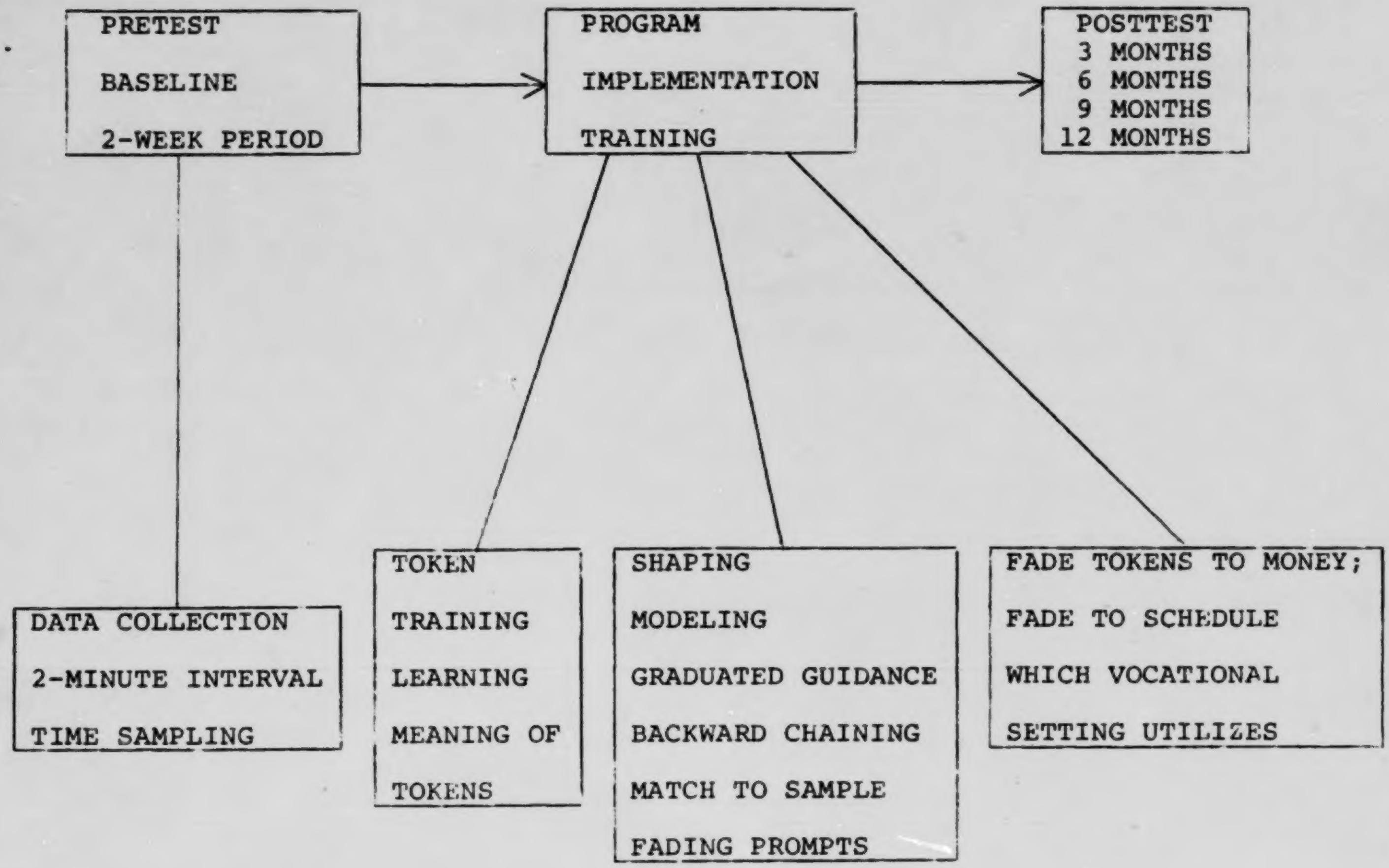
PROGRAM CHART


PRETEST
BASELINE
2-WEEK PERIOD
PROGRAM
IMPLEMENTATION
TRAINING
POSTTEST
3 MONTHS
6 MONTHS
9 MONTHS
12 MONTHS
DATA COLLECTION
2-MINUTE INTERVAL
TIME SAMPLING
TOKEN
TRAINING
LEARNING
MEANING OF
TOKENS
SHAPING
MODELING
GRADUATED GUIDANCE
BACKWARD CHAINING
MATCH TO SAMPLE
FADING PROMPTS
FADE TOKENS TO MONEY;
FADE TO SCHEDULE
WHICH VOCATIONAL
SETTING UTILIZES

"HELLO, SMALL UNITS, BRIEF QUIZZES, AND FREQUENT QUIZZING," OR, COMPENSATORY PROFESSIONAL PERSONNEL PREPARATION COMES OF AGE

Gordon Bourland and Michael A. Smith

In recent years the demand for accountable, effective teaching of the severely/profoundly handicapped in public educational institutions has risen drastically. This demand pertains to teachers in the public schools and in residential educational facilities. Fortunately, departments of education in some colleges and universities are sensitive to this demand and are providing some very competent teachers of the severely/profoundly handicapped, including the deaf-blind. Unfortunately, the number of these programs and the number of teachers adequately trained to work effectively with this population is insufficient to meet the current and projected need. As a result, many teachers working with the severely/profoundly handicapped are either inadequately trained to work with this population or are trained to work with other less handicapped populations. The present situation is that many of the professional personnel given responsibility for accountable, effective education of the severely/profoundly handicapped, including the deaf-blind, are currently in need of substantial additional training.

This situation necessitates that compensatory training for professional personnel be provided. Traditionally, two types of such compensatory training for professional personnel preparation have been used: (1) returning to a college or university for graduate or follow-up training, and (2) inservice training, typically brief workshops. Each of these strategies has limitations.

When teachers return to a college or university for graduate or follow-up training, a very basic problem is to find a college/university with programs for severely/profoundly handicapped, particularly deaf-blind. At the recent Conference of Personnel Preparation for Deaf-Blind Education in Boston, it was apparent that there are few such programs, at best 15 in the nation, for training teachers of the deaf-blind. Further, these few existing programs cannot possibly handle the number of personnel in need of training. Many of the teachers currently in the field in need of compensatory preparation are unable or reticent for various reasons to take a year's leave or to devote several summers to being virtually full-time students. Few university structures are sufficiently flexible to provide adequate, alternative compensatory training programs. Additionally, many of those university programs which do exist typically do not require and/or generate mastery of the competencies needed to educate the severely/profoundly handicapped.

Regarding inservice training, most teachers state that the brief (one- or two-day) workshops, seminars, etc., typically comprising inservice provide some useful information, but it is often inadequate in breadth and detail and the topics all too often are arranged unsystematically. Additionally, as with college/ university programs, inservice training activities typically fail to generate or assess mastery of any specific competencies and typically are not accompanied by follow-up.

In time, with adequate additional money and personnel, many of the problems confronting college/university based compensatory professional personnel preparation can be solved: some probably will not be. Most college/university programs probably will not develop the flexibility to provide the additional training to many teachers; mastery-based programs are being accepted fairly slowly. Most of the limitations existing in inservice training are probably so great as to prevent this strategy from ever carrying a very large portion of the burden of compensatory professional personnel preparation.

Nevertheless, what can be done now? A constructive approach is to inquire whether an interim solution might be in nontraditional alternatives. Any such alternative would need a number of personnel highly skilled in working with the severely/profoundly handicapped. Also required is flexible delivery system which would allow provision of training at minimum inconvenience to the personnel receiving it, an instruction methodology which assures mastery of the requisite skills, and a follow-up system.

We in the Multihandicap Project at Richmond State School have developed a reasonable approximation of the nontraditional alternative prescribed above. First, we have a number of personnel who are highly skilled in accountable, effective education of the severely/profoundly handicapped, and the deaf-blind in particular. These personnel have successfully taught self-care; orientation; mobility; preacademic, prevocational, and language skills; motor development; social interaction; and have managed severely dysfunctional behaviors. Second, the compensatory personnel preparation program we have developed includes a flexible delivery system. Our program is explicitly designed so that negotiations to arrange training are simple and brief and so that any particular training arrangements need not necessarily conform to artificial time constraints such as semesters, quarters, school terms, or vacation period. Flexibility is also possible regarding the training site; it can be at Richmond State School, or at various sites away from the school, such as in an Educational Service Center or a school building. This mobility is possible because a sizable portion of the funding has been earmarked for travel and the training staff has as its primary job responsibility the provision of training.

The flexibility and mastery requirements are partially fulfilled as a result of the type of educational technology incorporated. This technology is a form of personalized instruction based upon Fred Keller's (1968) paper entitled, "Goodbye, teacher..." (from which our title is drawn). The major components of Keller's method are: (1) self-paced progress through the materials, (2) division of the material into small units,

(3) frequent brief quizzes, (4) mastery criteria, (5) personal tutoring and remediation, and (6) use of lectures as supplementary resources. One of the obvious benefits of this instructional strategy is the flexibility which it affords. Flexibility of this nature is at a premium in compensatory professional personnel preparation, given such factors as conflicting schedules, time constraints, great variability in verbal sophistication of students, instructor shortage, and impracticality of rigid restrictive class schedules. Many of these flexibility requirements are satisfied by students who are free to engage in the educational activities (studying, quizzes, tutoring, remediation, etc.) at any possible time rather than being restricted to lecture or class periods; lectures can be used on a supplementary basis. With sufficient effort, this technology can be adapted to almost every possible subject matter.

In our project we have found use of the principles and methods of applied behavioral analysis the most effective strategy in teaching and training multihandicapped students in a state residential facility. As a result, several of our staff members, though very skilled and knowledgeable in other areas, needed training in these principles and methods. In as much as the limitations previously mentioned regarding traditional instructional methods also hold in our situation, we turned to the Keller format. We currently have two levels of training: (1) aide--covering the basic observation, graphing, and behavioral methods (10 units), and (2) teacher/trainer--covering a complete introduction to behavioral principles and methods (16 units), with the mandatory pre- and posttests. (A third level for supportive personnel is currently being developed.) The complete training package includes the 10 or 16 units; then, when 90% correct is achieved on the posttest (retakes are allowed on the posttest with study and tutoring intervening), a supervised practicum is begun. At this point, persons in the teacher/trainer level also begin writing and revising individualized instructional programs utilizing the principles and methods of which mastery has been demonstrated. The written material for the teacher/trainer level originally was the text by Miller (1975), but because it did not meet our needs, we wrote our own materials following Miller's basic format. We have also written our aide-level materials using his format. Video-tapes are being developed to accompany the various units. Currently we have trained our own staff at the Multihandicap Project, staff of other units at Richmond State School, and public school special education personnel from around the state. Persons trained have included aides without high school diplomas, persons with only high school diplomas, recent college graduates, and educators who have been in the field for years.

To date, the skills demonstrated by the persons we have trained have positively reinforced our use of this instructional technology. This use is further strengthened, via negative reinforcement, by our avoiding many of the problems enumerated above when traditional methods are used to provide compensatory professional personnel preparation.

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NOW THAT WE'VE FOUND THEM, WHAT DO WE DO WITH THEM?

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The education of deaf-blind, multihandicapped children usually was considered the responsibility of agencies other than the public schools. Services for these children are usually available from state schools, state hospitals, and specialized public or private institutions. The parent or guardian of a severely handicapped child, in turn, would have two possible avenues along which to proceed in order to have service provided for the child: (1) a nonpublic school agency, or (2) maintenance of the child in the home. However, the greater the exposure the child has to professionals such as those located in the specialized agencies, the greater is the probability of educational gains. For the child who remains in the home, there are home-bound teachers who offer support assistance and educational experiences for the child, but the major responsibility for maintenance rests with the parents. Because of long waiting lists and/or excessive costs, the delivery of services to these children frequently falls on the parents, most of whom have little or no training or exposure to educational service techniques.

The role of the public schools, in terms of dealing with severely handicapped school-aged children, was identified as that of a facilitator rather than that of a provider of services. The school would contract with an outside agency (with the financial aid of the Texas Education Agency) in order to serve the child and to provide an adequate educational environment. The private and/or public agencies maintain a staff of specialists trained to deal with specific handicapping conditions which would be beyond the capabilities of all but the largest metropolitan school districts.

In 1969, the Texas Legislature passed Senate Bill 230, which was designed to assure statewide educational services for all handicapped children aged 3 through 21. This legislated right to education was translated and implemented into meaningful educational practice by the Texas Education Agency, in concert with the regional education service centers and local education agencies. As a result, all children within the state must be provided the range of learning experiences required to facilitate development of their individual capabilities (Texas Education Agency, 1976).

Additional legislation (the Education Amendments of 1974--Public Law 93-380) supplements Senate Bill 230 in that it required the identification, location, and evaluation of all children in the state who are handicapped and in need of special education and/or related services. The Education for All Handicapped Children Act (P.L. 94-142) further stated that priorities must be set for services to those children not receiving services and secondly, to those with the most severe handicapping conditions (Texas Education Agency, 1976).

In order to meet the responsibility of identifying and serving all handicapped children within the state, the Texas Education Agency initiated guidelines for regional projects aimed at the implementation of procedures and programs in coordination with the local school districts (Texas Education Agency, 1976).

The provision of adequate and appropriate services to all handicapped children in the state is the ultimate goal of Project Child Find. This comprehensive effort focuses on service to the whole child. Failure to consider all aspects of the child's environment which have direct influence upon his growth and development will result in incomplete and/or inadequate educational programming. Recent literature indicates that the most powerful educational and emotional influence on the young child is the family. Recognizing this factor, educational services should be directed toward the family as well as the child. Project Child Find attempts to accomplish this task by employing child/family centered strategies.

As a result of this statewide effort to locate and identify handicapped children, a large population of these children are beginning to surface. This factor, combined with the limited facilities available outside the public schools, will necessarily lead to the servicing of these children within the local education agencies. Many school districts have recognized this logical sequence of events and have approached the education service centers in order to aid in the preparation of their teachers for tasks previously unknown in many schools.

The Region X Education Service Center in Richardson, Texas, received local education agency requests to coordinate training in order to prepare teachers to deal with severely handicapped children within the public schools in northeast Texas. In response to that request, inquiry was made to various agencies and universities in an attempt to determine whether training models for teachers were available. Training models for preparing teachers to serve the educational needs of severely handicapped children were located both in the academic setting and state schools. These models are based on either a developmental or a behavioral theory.

The identified needs of the teachers within the region have been translated into the minimum criteria which a training model must meet in order for it to be implemented in the region. These criteria are:

1. The model must be a palatable training package that is geared to the public school classroom.
2. The model must communicate information in teacher-sophisticated terminology.
3. The model must be comprehensive in scope.

4. The model must be one that has proven itself successful in the field.

5. The model must insure mastery of practical application by teachers, previously naive to the tasks involved.

After examination of a number of available models, an interest was expressed by the constituents of the region in the training model prepared by the Multihandicapped Project of the Richmond State School.

The Richmond State School model is an intensive program that has been piloted in both the residential and public school settings. It consists of three basic parts:

1. The identification and definition of terminology that is pertinent to the training concepts.

2. The writing of educationally relevant programs for severely handicapped children that the teachers come in contact with during the training.

3. The practical application of these teacher-constructed programs for the children that they were designed for.

Progress through the program by the teachers is criterion based, utilizing mastery of progressive modules.

An interfering factor which has the tendency to inhibit the effectiveness of any training model, regardless of its design, deals with participant motiviation. The initial motiviation for participation in a training model can be traced to an emerging anxiety on the part of the public school teachers. This anxiety stems from the recognition of the emergence of large numbers of deaf-blind, multihandicapped children and the probability of the appearance of these children within the public school classrooms in the near future. In addition, motivation for teachers is available in the form of graduate credit from local universities for participation.

Once the participant motivation problem has been dealt with, another inhibiting factor emerges, namely, insuring that the participants translate these newly acquired skills into actual classroom practices. Participation in the training model by more than one teacher from each of the constituent districts will insure the availability of possible collaboration between similarly trained peers. Each of the trained teachers will be able to reinforce others in the district for the utilization of learned skills that will enhance educational growth on the part of the severely handicapped children. Additional follow up support is available from the educational service center in the form of a support team of professionals. This professional team consults with the local schools and attempts to enhance the development and implementation of classroom programs. The Richmond State School training staff supplements the regional team as an additional consultative source.

In summary, legislation is forcing a change in the focus on the deaf-blind, multihandicapped educational services. This focus is presently undergoing a shift in direction from the nonpublic school agencies back to the public schools. In order for the schools to be ready to meet this emerging trend, the individuals most concerned with service to these severely handicapped children, namely the teachers in the schools, should be trained to engage in activities in the classroom that have previously been foreign to them. Training models for this purpose are available from various sources and a concentrated effort on the part of many regions within the state can make these resources available to the teachers. By pairing the needs of the teachers with capabilities of the various training models, a palatable and efficient training institute can be initiated. In order to insure not only the success of the skill building, but also the implementation of those skills in the classroom, regional efforts can provide continuing support in consultative ways. Once the training of the teachers has occurred and the support services are provided, not only will we have found the seriously handicapped children, but also, we will know what to do with them.

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THE SEVERELY/PROFOUNDLY HANDICAPPED PERSONNEL TRAINING PROGRAM

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In 1969 the Texas Legislature passed Senate Bill 230; as a result, the Texas Education Agency developed a comprehensive special education program for exceptional children called Plan A. Subsequently, the Attorney General of the state confirmed that the plan includes all children and stated that all children have a right to an education which is appropriate for their needs.

Most of the Plan A schools have developed programming for mildly handicapped students; certification of teachers provides personnel trained to deal with this population. While it is anticipated that the prevalence of students with mild educational handicaps is larger than students with more severe handicaps, there is evidence to suggest that Plan A schools have not adequately met the needs of students who are more severely involved or multihandicapped.

The emphasis of current programming has clearly been placed on serving the mildly handicapped within the public schools. Recently, however, pressures from the national level, the courts, and from the state agency have focused increasing attention upon the severely and profoundly handicapped. The present trend is to deinstitutionalize handicapped children, and this trend is supported by court action which declares that all children as persons share in such constitutional rights as the right to due process, equal treatment, and education within a setting that provides the least restrictive alternative. But there has been little effort to include all children and even less effort to establish a continuun of services to meet the needs of severely and multihandicapped children in public schools in Texas.

Texas is faced with the following situation: a large number of handicapped children have been included in, or returned to, the mainstream of public education and are being served in non-self-contained settings. Limited, if not token, efforts have included some self-contained units for the moderately handicapped, but so far these efforts have minimally included the severely/profoundly handicapped. They are currently being served in state institutions, hospitals, community centers, and private schools. Growing state and federal trends indicate that the severely/profoundly handicapped will be deinstitutionalized and returned to local communities and public schools whenever feasible and possible. The problem is that personnel in Texas schools are not trained to provide adequate services for such children unless, by chance, schools have been fortunate enough to hire certified, out-of-state teachers who have received training to teach such students. At present, university teacher training programs are extremely limited to prepare teachers for the severely/profoundly handicapped. The state still has no certification requirements for such teachers.

of Region XIII Education Service Center approached Mr. Prothro and consequently, Region XIII submitted two proposals, one to BEH and one to TEA. A grant was awarded to Region XIII ESC by the Texas Education Agency to develop the Severely/Profoundly Handicapped Training Program.

This project will develop a modularized, developer-free, field-tested, packaged inservice training program which will be available for statewide use. In addition, 30 teachers who are employed or about to be employed in public school or public school related programs for the severely/profoundly handicapped will be trained in a field test of the materials.

The project will occur in three phases. Phase One involves the design of a competency-based model format. Authorities from around the state representing a multitude of disciplines met in a three-day work session held on May 3-5, 1976, in order to review the nearly 100 competencies or terminal behaviors organized by Dr. Eloise Jones of the Child Development Center.

Dr. Jones' task was monumental: to identify the competencies needed by teachers for this severely involved population; to organize these competencies into a framework which could be apprehended and approached by at least 50 experts in as short a time as possible, and to allow a structure which could encompass the suggestions for changes and the insertion of learning alternatives by specialists and which would lend itself to packaging for national dissemination. Her approach was to organize the competencies into seven clusters. She then prepared individual pages which stated the terminal objective and left space beside the following headings: Prerequisites, Preassessment, Learning Alternatives, Postassessment, Required and Optional Materials.

The 50 participants were presented with the outline of the program and were given the charge to provide the essential expertise in designing appropriate activities in order to accomplish each competency. Results of the work session are massive and impressive in professional know-how. An initial collating committee under the direction of Dr. LaMartha Wallace of Southwest Texas University is in the process of organizing the material. The primary obligation this committee has is to use the material contributed at the work-study session held in May. The material will then go to the University of Texas for review by professors in the field of the severely handicapped. It will also go to the Texas Education Agency, the University of Washington in Seattle, and to the Professor of Record, who will make the final decisions regarding content.

Phase Two will consist of a field test of the training program in which 30 teachers of the severely/profoundly handicapped will participate in training from July 19 to August 6, 1976, in Austin, Texas. Training will consist of in-class lecture and demonstration, followed by on-site observation and practice. Training sites will provide opportunities for participants to work with children having the following handicapping conditions: blind, deaf, deaf-blind, autistic, crippled, mentally retarded, and emotionally disturbed.

Yet at the local level parents appear at the school with these children insisting that appropriate programs be provided. Suddenly, local educators are startled with the realization that existing programs are not adequate. One of the most serious of a myriad of problems that immediately surfaces is the obvious lack of adequately trained personnel who are needed to design and implement such programs. Even more startling is the lack of awareness in the general public as to the needs and capabilities of this population of unserved and returning students.

The Education for All Handicapped Children Act of 1975, S.6, P.L. 94-142, sets a limit of 12% of the total number of children, ages 5-17, in a state for which the state may receive services from special education funded by these federal allocations. Texas provides special education services for 12% (305,059) of the total enrollment (2,785,296). Mikulin (1976) estimates that of this 12%, approximately 13% (39,657) are being served in arrangements for the severe.

The implications of S.6 (P.L. 94-142) are that the states shall find those children not presently receiving services, that appropriate services shall be provided, and that the most severely involved will be served first. Texas H.B. 1673 mandated that any educational institution receiving tax funds must provide equal educational opportunities to all individuals within its geographical jurisdiction. However, the legislation does not mean that all children can or have to be educated within the public school setting, but it does make statements regarding interagency cooperation and community and parental involvement.

The Child Find activities underway this spring throughout Texas have emphasized finding children who are not presently being served in the public schools. The numbers and needs of the children found will determine the funding levels for Phase II, which will be directed toward appraisal and service.

Mikulin (1976) hypothesized that the severely involved children identified as a result of Child Find activities will increase the numbers of children served in arrangements for the severe in the public schools from 13% to at least 15%.

The Texas Education Agency, being cognizant of the need for prepared personnel, has encouraged the development of preservice teacher training at the university level. In addition, a need was seen for inservice education for certified teachers who will be in programs for the severely/profoundly handicpaped in the very near future. At the Texas Council for Exceptional Children convention held in Corpus Christi, July 1975, Hayes Prothro of the Agency announced in a meeting of the Teacher Education Division that he was requesting proposals for inservice training of teachers of the severely/profoundly handicapped. He invited any interested representatives of training institutions to meet with him after the session to discuss the proposal further. Dr. Ben Wallace of

Phase Three will consist of revision of the training materials based on the field test and packaging of the materials in final form for dissemination throughout the state. The project will be completed by May 31, 1977.

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OTOAUDIOLOGICAL PROGRAMMING FOR THE MULTIHANDICAPPED IN A RESIDENTIAL FACILITY

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Research reveals a high incidence of conductive hearing loss among the residential retarded population (Fulton & Griffin, 1967; Fulton & Lloyd, 1968). Downs (1974) reported that more than 50% of the Down's Syndrome population has a conductive hearing loss due to middle ear pathologies. Aside from impacted wax, the most common cause of conductive loss among preschool and early school age children is otitis media (Pinsker, 1972; Brooks, 1974). The damage of otitis media can be both physical and functional. Symptoms of otitis media vary with the type. Characteristics of acute otitis media are sharp pain, mild hearing loss, discharge from the ear canal, tinnitus, temperature elevation, and increased pulse rate. Chronic otitis media, an "infection of long standing in which there are no signs of acute inflammation," is characterized by mild to moderate hearing loss, drainage from the ear, perforation of the tympanic membrane, and oedema (Hall, 1973). Untreated chronic otitis media may develop further complications of cholesteatoma, tympanosclerosis, polyps, and sensorineural hearing loss (English, Northern, & Fria, 1973). In addition to the physical damage, functional damage in the form of language retardation has resulted in children with a history of otitis media. Studies (Scottish Council for Research in Education, 1956; Holm & Kunze, 1969) point to the detrimental effect of chronic otitis media on language development for those children up to nine years of age.

For residents in institutions with the mentally retarded, the incidence of otitis media is probably higher than the normal population because of the increased occurrence of upper respiratory infections, poor ear hygiene, anomalies of the external and middle ear, and inability of many residents to communicate their problem. Unfortunately, institutions with well-coordinated programs to combat middle ear diseases effectively are more the exception than the rule.

A comprehensive otological-audiological program was designed and implemented at Lufkin State School in March of 1975. The program was divided into three levels: audiological screenings, diagnosis/treatment by resident staff physicians, and diagnosis/treatment by the otologist consultant. Since the economics of the medical facilities at state institutions often prohibit the hiring of a full-time otologist, it is the responsibility of the medical administration to establish regular visits to the community otologist on a consultant's basis.

Level I is initiated with a certified audiologist performing or supervising a screening of the entire resident population with priority testing of the following:

1. Residents with a history of ear and upper respiratory problems.

2. Interdisciplinary team referrals.

3. Residents in deaf education and aural rehabilitation programs.

4. Medical referrals from staff physicians.

5. Residents who are scheduled to undergo ear surgery or have undergone ear surgery in the past five years.

6. All residents under eight years of age.

The main tool of the audiologist is the impedance bridge. The success of impedance audiometry to aid in the diagnosis of middle ear pathology is well documented (Jerger, 1970). Fulton and Lamb (1972) showed that normative results of impedance audiometry with the mentally retarded were essentially equal to the normal population. Use of the impedance screening for large populations has proven more practical than otoscopy and more efficient in discovering middle ear infections than pure tone screening (McCandless & Thomas, 1974). Impedance audiometry is ideal for the mentally retarded population because it requires no voluntary response from the testee, completion time is 4-8 minutes, and there is the allowance for sedation of an uncooperative resident. The screening procedure consists of measuring tympanometry and obtaining acoustic reflex thresholds. The resulting tympanograms are categorized into five types (Jerger, 1970). Type A curves are indicative of normal middle ear function. The peak of the A curve is around 0 mm. Type As shows a very shallow peak near 0 mm. Type Ad has a high peak near 0 mm. Type C peaks at a negative pressure greater than -100 mm. Type B has no peak. All the types except A are suggestive of middle ear pathology. Acoustic reflex thresholds are obtained at 500 Hz, 1000 Hz, and 2000 Hz. The initial pure tone stimulus is 80 db HTL. The intensity is increased in 5 db increments until a discernible response by the balance needle is observed. If the resident exhibits excessive activity or vocalizations interfering with the tone-needle response, the test is terminated and the resident is labeled difficult to test. To pass the screening, the resident must have Type A tympanograms and acoustic reflex thresholds at 110 db or better in either ear.

Prior to the impedance screening it is mandatory to perform an otoscopic evaluation. If there is sufficient cerumen or debri to block a full view of the tympanic membrane, the resident is referred to the staff physician on Level II for treatment. After removal of the blockage, the resident can be given the impedance test. During the otoscopic evaluation, drainage from the ear or inflammation of the canal walls may be noticed. These residents are immediately directed to Level II, bypassing the impedance screening.

After completing Level I, the resident is placed in one of five groups. Group I includes those residents who meet passing criterion; Group II consists of those with draining ears or inflammation of the ear canals; Group III consists of residents who are difficult to test; Group IV consists of those with tympanograms other than Type A; and Group V shows Type A tympanograms, but no acoustic reflex at 110 db or better. Groups II and IV are referred to Level II for the medical evaluation. Group III is considered for sedation. Group V is scheduled for further audiological testing.

Beforehand the audiologist establishes certain time periods and days of the week in which residents are seen by the physicians. Since the audiologist is the liaison among the three levels, it is essential to maintain accurate records. The audiologist fills out a medical referral sheet outlining reasons for referral, physician's initials, audiological data, medical diagnosis and prescribed treatment as dictated by the physician, subsequent medical and audiological visits, and the level and group of the activity. These records are to be kept by the audiologist.

The resident who moves to Level II is examined by the staff physician. Once examined by the staff physician, the direction of the resident is determined by the medical diagnosis. He is placed in one of three groups:

Group I	No pathology observed, recommend referral for comprehensive audiological testing.
Group II	Ear pathology noted with treatment available from staff physicians. Treatment initiated, rescheduling of resident with audiologist and physician in two weeks.
Group III	Ear pathology noted with recommendation that resident be referred to Level III for diagnosis/treatment by the otologist consultant. An audiological may be recommended prior to the visit, if desired by the staff physician.

Level III is the physical examination of the referred resident by the otologist. Rittmanic (1971) elaborates on four possibilities that may ensue. Another essential grouping was added to his four:

Group I	No evidence of ear pathology, dismissal from the otoaudiological program.
Group II	Sensorineural hearing loss, enrollment of resident into an aural rehabilitation program.
Group III	Evidence of external and/or middle ear pathology, medication therapy recommended.
Group IV	Evidence of external and/or middle ear pathology, surgical intervention recommended. Otological-audiological monitoring should continue until the otologist is satisfied with the resident's recovery.

Group V   Inconclusive results, recommend further testing.

The Otoaudiological Program was applied to 79 residents comprising four of the six multihandicap dormitories at Lufkin State School. As measured by the Vineland Social Maturity Scale, the residents were in the severe or profound range of mental retardation. The ages ranged from 7 to 54 years old. The number with sensory deficits was undetermined, though it was recommended by the Interdisciplinary Team that eight enroll in a deaf-blind program. All the residents had severe motor disabilities. All but one spent the majority of their waking hours in a wheelchair or bed. All the Level I and II evaluations were completed in a training room on the individual dorms.

An AP61C Peters Acoustic Impedance Bridge and otoscope were utilized by a certified audiologist during the Level I assessment. The audiologist was aided by two staff members and one attendant from the dormitory being screened. With an alphabetized list of the residents in the dormitory, the attendant would prepare and transport the next resident. The attendant would also assist the staff member in constraining the resident. The other staff member would function as a recorder. The approximate amount of time necessary to perform an otoscopic and impedance evaluation was 10 minutes. Level II personnel consisted of staff physicians who were general practitioners. During each medical evaluation, the physician was assisted by a nurse and aide. Level III evaluations were performed by a team composed of the consultant otologist, staff physicians, audiologist, and two nurses. A complete ear, nose, and throat evaluation would be made, supplemented by audiological information, x-rays, and direct cultures. If minor ear surgery was required, arrangements were made for sedation and accomplished in the school infirmary. Major surgery was performed at the local hospital.

The results of the Level I testing for the 79 residents have been divided into the five groups. Forty-eight percent of the residents passed the screening. The remaining residents exhibited

Table 1

Numerical Placement of Residents According to Groups in Level I

Groups	N1	Percent
I	38	48
II	4	5
III	7	9
IV	15	19
V	15	19
	$\Sigma N1 = 79$	

either maladaptive behavior, abnormal tympanometry, drainage from the ear, and/or acoustic reflex failure. Nineteen residents comprising Groups II and IV of Level I were referred to Level II. The staff physicians examined these residents and directed them to Level III. The resultant diagnosis by the otologist divided the 19 residents among the five groups. Three residents were diagnosed as having no evidence of ear pathology. Thus, three referrals were unnecessary. Since no prior audiograms were completed, the otologist was unable to determine if any of the referrals had a sensorineural hearing loss . Twelve residents who had evidence of external and middle ear disease were recommended for medication and reevaluation. Two residents with evidence of external and middle ear disease were considered candidates for ear surgery. One resident had stenotic ear canals and the other showed indications of otosclerosis.

Table II

Numerical Placement of Residents According to Groups in Level III

Groups	N1	Percent
I	3	16
II	0	00
III	12	63
IV	2	10.5
V	2	10.5
	ΣN1 = 19	

The results of the study provide a number of implications. Poor aural hygiene was exhibited by 35% of the tested population. Though most institutions have standards requiring proper oral hygiene, there is no mention of proper aural hygiene. Certainly this figure reveals the necessity of such treatment. The results showed that 16% had external or middle ear disease, a figure which is high enough to warrant the implementation and continuation of otological-audiological services for the multihandicapped resident. The utilization of impedance screening proved to be excellent for determing those residents who needed immediate medical treatment. Impedance testing correlated 80% with the Level III testing. Whereas with traditional audiometry, the difficult to test number would be very large, only 5% were labeled as such.

The Otoaudiological Program displayed efficiency and rapidity in locating those residents with medical ear pathology, and it uncovered those in a high risk hearing loss group. With the built in audiological and medical follow-up evaluations, it provides a persevering effort to treat the ear disease on a long term basis, rather than in isolated and incomplete medical treatments.

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ELECTRONICS IN HABILITATION AND REHABILITATION: THE CONCEPT OF A TRAINING RESOURCE CENTER

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Institutions serving multihandicapped children are typically understaffed and often are forced into providing residents with mere custodial care. However, recent court cases, investigations, and exposes in the media have called the adequacy of such treatment into question and, in fact, have demanded equal rights. Assuming that these rights entitle a severely or profoundly retarded person to training in basic skills of living such as feeding, toileting, and dressing, many institutions are faced with the staffing problem which such a task imposes.

The Training Resource Center (TRC) was originally founded under a federal grant (Title I, P.L. 89-313) at the Mansfield Training School, Mansfield, Connecticut, and has expanded the concept at the Richmond State School to broaden a staff member's reach by devising electronic aids to supplement or initiate programs for training severely and profoundly retarded and multihandicapped children.

The Concept of the TRC

Instruments used to aid in the observation and modification of behavior are expensive, yet they are often relatively simple and limited in function. The TRC is established at the Speech and Hearing Institute to produce economical equipment to fill the needs of Richmond's professionals, and more importantly, to assess and serve the needs of other institution's severely and profoundly retarded residents through innovative instrument use and design. By making inexpensive instrumentation available to aid in training and observation, the TRC hopes to reduce the time spent on custodial duties, thus effectively increasing the staff to patient ratio. The TRC is staffed by electrical engineers, biomedical engineers, and electronic technicians, encompassing skills in electronics, speech and hearing, psychology, and vocational rehabilitation. To augment its staff, the TRC has available for consultation the Speech and Hearing Institute, psychology, and physical therapy at TIRR, as well as the departments of Speech and Hearing, Psychology, and Mechanical and Electrical Engineering at the nearby campus of the University of Houston.

The essence of a TRC is economy. Making use of the relatively inexpensive labor force available in a university community is an essential aspect of the operation. This arrangement is obviously beneficial. In addition, it provides students at the university with experience in applying their field of study to the area of mental retardation.

Audiological Assessment

Hearing and auditory stimulation serve as the basic sensory channel for the learning of language and speech skills (Knauf, 1972; Sanders, 1972). Data from sensory deprivation studies indicate that unless we provide the auditory system with unique acoustical stimuli, the possibility exists that the individual may never possess the ability to develop his auditory potential (Sterrit, Camp, & Lipman, 1966; Tees, 1967).

When dealing with a normal infant, early diagnosis of hearing loss is essential for aural rehabilitation. An audiologist working in this area must be able to assess hearing disorders and provide amplification for infants as young as six months. In addition to diagnosing the problem and providing amplification, a thorough program of aural rehabilitation will also include continued monitoring by an audiologist, visits to an otologist for assessment of pathology, and parent counseling by a social worker.

When dealing with severely and profoundly retarded or multihandicapped individuals, the problem of diagnosis is magnified. For example, a retarded child with a dysfunction in the sound-conducting apparatus of the middle ear typically cannot indicate the source of his pain. Consequently, innovative techniques such as impedance audiometry, preconditioning, and evoked response audiometry have been developed to give some hope for early diagnosis in difficult-to-test children (Lloyd & Fulton, 1969).

Obtaining an accurate audiogram from a profoundly retarded child can be accomplished through procedures of operant conditioning. This has been done through the use of the tangible reinforcement operant conditioning apparatus (TROCA) and a portable TROCA (PTROCA) designed and built by the TRC (Lloyd, Spradlin & Reid, 1968). In order to generate an audiogram the child being tested must be taught to give a reliable response to pure tone auditory stimulation. The PTROCA is a box containing a tone generator that can be varied in frequency (250-4000Hz) and intensity (0-100dB), and an M&M dispenser (designed by the TRC: parts cost $7.50). A touch plate is attached to the front of the box as a response mechanism. In the program implemented by the audiologist, a child is trained to respond by pressing the plate only when the tone is on. When a criterion of responding is met, the child is ready for audiometric assessment.

The TROCA was designed to aid in the basic procedure of audiometric assessment--audiogram generation. The function of the device is to control presentation of stimuli via a pure tone audiometer and to record and reinforce responses made to these stimuli. Four temporal parameters can be preset when using the TROCA: stimulus on-time, time between stimulus presentation, duration of reinforcement, and off-time correct (This last parameter takes into account the fact that some individuals respond soon after the stimulus goes off rather than while it is on.). The TROCA offers the option of presenting two reinforcers in addition to M&Ms for correct responses.

Slides or other visual displays, if found to be reinforcing, can be made contingent upon correct responding. Reinforcement can be delivered for each correct response or the schedule may be adjusted so that from two to eight consecutive correct responses are required before reinforcement is given. This procedure makes responses more resistant to extinction and postpones satiation effects. The TROCA automatically records errors, number of stimuli presented, correct responses, and number of reinforcements administered.

Once hearing loss has been diagnosed, and it has been ascertained that the loss is not surgically correctable, proper amplification must be given. The TRC is currently concluding the development of an auditory trainer which is designed for use by severely and profoundly retarded multihandicapped children. Two goals were kept in mind while developing the trainer: audio fidelity and durability. Fidelity has been achieved by incorporating miniature, state-of-the-art, solid state components. To insure durability the unit has been sealed in epoxy and equipped with a sturdy connecting cord. For convenience of operation the unit is equipped with rechargeable batteries. The trainer, as constructed, will endure dropping, vibration, and immersion in water.

Through instrumentation made available by the TRC, assessment of audiological deficits in severely and profoundly retarded individuals has been made feasible. After the auditory trainer has been field tested, it will be made available for individuals with hearing losses, and these individuals will be trained to use the device through a gradual adaptation program. The author feels that this auditory trainer provides the most durable and economical (parts cost approximately $20) amplification device for these children.

Toilet Training Devices

Probably the most handicapping behavior characteristic of the severely and profoundly retarded is their lack of proper toileting behavior. An incontinent child is not permitted to attend school whether it be a public school or even one at a state institution. Field trips, as rare as they are for the profoundly retarded, are nonexistent for nontoilet-trained children. Finally, it is obvious that home visitations with parents and family will be a direct function of a child's toileting behavior. Expecting a mother and father to take their 17-year-old, untrained son home for a visit is an unrealistic hope.

A review of the literature on toilet training, provided by Van Wagenen et al. (1969) and Azrin and Foxx (1971) indicates that techniques used with normal children have not been efficient or effective for a retarded population in an institutional setting. Both Van Wagenen (Van Wagenen, et al, 1969); and Azrin (Azrin, et al, 1979); Azrin & Foxx, 1971) proposed the use of electronic units to monitor a trainee's elimination in both proper and improper locations. Our own devices, developed during 1972, took their function from those described by Van Wagenen et al (1970).

Two sets of units were developed. One set monitors the resident's elimination as he moves through his environment. This set consists of a moisture detection circuit enclosed in a soap dish which is worn by the resident either in a harness or a vest. The circuit is connected, via a cord, to a pair of underpants which have pliable wires running along their midline.

The other set of units monitors elimination on a commode or toilet and consists of a signaling box containing the moisture detecting circuit, a circular plate which is hung on the toilet or commode, and a wire to connect the two. The heart of both units is a moisture detection circuit mounted on a printed circuit board.

The units were developed over the course of six months. This time was spent testing circuits for sensitivity and reliability and designing enclosures for durability. Six weeks of field testing then ensued; this period also served as an in-service training period for our direct care staff. It should be emphasized that the units worn on the body and the commode units do not toilet train the residents. The program in which the devices are used does the toilet training, and the devices facilitate this by indicating to the trainer exactly when proper or improper elimination is beginning. These devices are also suitable for the program described by Azrin and Foxx (1971) or Foxx and Azrin (1973) or any other similar procedure.

After testing was completed to our satisfaction and minor modifications were made, it was decided that the items should be marketed. This decision was made for two reasons: (1) as a federally funded program, the TRC has a responsibility to disseminate information, and (2) programs describing the use of electronic equipment in toilet training are available to those familiar with the behavior modification literature, but the devices necessary to implement the programs are costly to purchase or build on a small scale.

Early in 1972, literature describing the toilet training equipment was sent to 180 institutions in the United States and Canada. All toilet training devices were made available as completed units or in kit form. A full set of instructions for constructing the units for available electronic components was also developed. At the present time, sales have been made to more than 50 institutions in the U.S. and Canada.

Two aspects of the TRC's marketing of toilet training equipment differentiate it from other rehabilitative equipment marketing. First, the profit realized is minimal. For example, the sensitized training pants kit is sold at cost and the body-worn alerting unit is sold at $2.19 above cost. The author wants to point out that before a body-worn alerting unit can be shipped, the parts must be obtained and predrilled, and the printed circuit board must be etched.

Second, in Connecticut an attempt was made to employ mildly and moderately retarded individuals in a sheltered workshop situation to produce units for other institutions. This project was possible because the Mansfield Parents' Association, which finances a sheltered workshop on grounds, agreed to provide the capital necessary to produce the units and to pay the residents employed in the project. Additionally, residents were available who could perform the tasks required without a large amount of training.

Unfortunately, it was necessary to stop producing completed units in our sheltered workshop, and only kits and instructions are now being sold. This change was necessary because staff was not available to train the less capable residents presently employed in the workshop.

Programs such as these which are directed toward the prevocational multihandicapped child should fill this gap, and preliminary discussions are currently under way to produce these electronic devices in a sheltered workshop for other institutions or treatment facilities. The author feels that the only way to market completed devices is through a sheltered workshop.

Future Directions

Two goals for the future are to expand the TRC's range of effectiveness and to increase its resources. A step toward increasing the range of effectiveness is currently under way at Richmond. A second step will be to bring all devices into production status, or if this is not feasible, to make adequate documentation available in order that other institutions may produce their own devices. The distribution of a catalog of these devices is anticipated. Establishing a training resource center is not necessarily a difficult task. Thus, it is hoped that the Speech and Hearing Institute may act as a consultation group for the establishment of similar centers in other locations.

Another virtually untapped resource are university engineering departments. Professors in mechancial and electrical engineering are looking for relevant projects for their students. Engineering students at all levels are capable of producing devices suited to particular needs of an institution for the retarded. The Speech and Hearing Institute's relationship with the University of Houston's Engineering Department is in the formative stages now, but it is hoped that a time will come when an electrical engineering research assistant will be assigned to Richmond or the Speech and Hearing Institute as a coordinator of projects.

It is the Training Resource Center's premise that if the rehabilitation of severely and profoundly retarded and multi-handicapped persons is to occur, treatment efficiency will be optimized if devices of the type and cost of those produced by a TRC are made available. To our knowledge, the TRC at the Speech and Hearing Institute with all its ramifications is unique. We do know, however, that many other institutionally oriented research laboratories exist and feel that it would be mutually beneficial if lines of communication were established.

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THE IMPLEMENTATION AND MANAGEMENT OF A BEHAVIOR MODIFICATION PRACTICUM

James Kopp and Sandy Martin

The university behavior modification practicum in its conceptual form is designed to meet two particular goals: (1) to provide psychology undergraduates with hands-on experience in the application of behavioral techniques to train and rehabilitate handicapped and retarded citizens, and (2) to tap the human resources latent in the university undergraduate population to provide motivated volunteer help in various community training and treatment settings.

There are decided advantages in interfacing university training and community work, and giving students practical experience in community settings as an adjunct to the classroom experience has a long history in academic classroom teachers must serve a required semester as student teachers, social workers are required to have practicum experience, clinical psychologists and medical students intern, and so on.

A co-interaction between the university and the treatment setting is, in principle, advantageous to both parties. Students are talented volunteers, entering the community not only as extra hands but also as trained minds. The university, on the other hand, needs to train students, and in situ, hands-on experience is an extremely effective means to that end.

In a formal sense, the goals of the university and the goals of the treatment facility are complementary in at least three ways.

First, since the university must train students, this training is most effective in a real-life situation. At the same time the treatment program is usually not over-budgeted. Most institutions encourage community participation and are prepared to supervise volunteers. A co-interaction between the university and the treatment setting is almost inevitable on these grounds alone.

Second, the practicum students will eventually graduate and will seek employment. The practicum allows the student to become familiar with the frustrations and rewards of employment as a helping professional. On the other hand, the treatment setting needs to recruit for the helping professions. College students who have had a chance to experience the gratification inherent (on occasion) in a career devoted to the well-being of others may be easier to recruit. More importantly, talented students can be spotted early through the vehicle of the practicum and can be actively recruited. Such screening is certainly superior to the standard 15-minute employment interview. The university in its turn needs to place students after graduation. Few students would attend a university if it were obvious before the fact that employment after graduation is unlikely. The healthiest universities are those that offer students training in areas in which job prospects are good.

Third, both the university and the treatment setting can serve one another through the communication line created by the practicum. One of the university's more important missions is to serve the community, and providing student volunteers is an important service. The university can also function as an information pool by providing the staff in a treatment setting with access to new findings and information relevant to their practices. Through the university library and through the university practicum supervisor, the treatment setting can become a branch campus. Rapid access to new approaches in treatment and training becomes possible without the necessity for budget increases for research personnel, library materials, and consultant services. While the university wants to disseminate information, it also must gather information to conduct research. Information relevant to the treatment and training of handicapped and retarded individuals cannot be gathered solely in the laboratory or in the clinic. The practicum is one vehicle for gathering this information.

Supervising and Utilizing the Practicum

Although at face the university-treatment setting co-interaction would seem to be inevitable and the benefits mutual and numerous, the actual implementation of the relationship is not without its problems, some of which can be resolved relatively easily by mutual understanding. Others seem to be endemic to the style and traditions of university student behavior and require special supervisory practices.

One problem is that although the staff of the treatment setting realizes that the practicum experience is a learning experience, the attractiveness of the practicum to the treatment setting staff is that it promises to unburden the staff rather than to make more demands upon it. When a practicum supervisor asks for frequent meetings between the treatment staff and the practicum student, it is viewed by the professional staff as an added demand on an already overloaded work schedule. The supervising professor, on the other hand, usually feels that without such meetings the supervision of the students' training and frequent evaluation of the students' performance are impossible. What is more mutual exchanges of information and control of research protocols cannot take place at the end of a semester's time. Also, the behavior of students is usually somewhat below the standards set for the professional, a circumstance which can create interpersonal conflicts and, in its extreme form, destroy the relationship between the university and the treatment setting. Frequent meetings, although a burden, are actually desirable as a means of fighting the interpersonal brushfires before they can start.

Another aspect of the practicum that can create problems is that, after arranging conditions in the treatment setting to accommodate the practicum, the staff can fall victim to what is termed "the practicum fix." In turning over some duties and responsibilities to practicum students, the treatment staff becomes somewhat dependent upon them. Problems result because the university calendar year consists of three to four quarters or two semesters which are interrupted by between-semester breaks. During each semester, breaks are also interspersed for Thanksgiving, Christmas, Easter, and Lyndon Johnson's birthday. There are no between-semester breaks in the community setting, and the timing and duration of the university holidays seldom coincide with the community holidays. Thus, the treatment staff is left without students periodically, and withdrawal symptoms are not pleasant.

Fortunately, problems concerning supervision and utilization are not insurmountable. The solution is to have all parties to the practicum relationship--supervisors, staff, aides, volunteers, and students--note beforehand what the potentials for conflict are and how they are to be handled. The purpose of the staff-student meetings can be spelled out before the fact and scheduled. The university calendar should be presented to the treatment personnel and contingency plans drawn up for those days in which it will be impossible to insure full practicum attendance.

A valuable adjunct to the agreement is the behavioral contract, a device through which the entire agreement is spelled out in detail. A clear specification is made regarding the responsibilities of both sides. The agreement is then typed and signed by all individuals involved. It is agreed by both sides that abrogation of the contract will lead to certain contingencies; the treatment staff may lose its student volunteers, a given student may be asked to resign from the practicum, the practicum supervisor may lose the opportunity to give his students the much-needed practicum experience or the opportunity to do applied behavioral research, and so on. The behavior contract has been extremely effective as a means of reducing problems associated with cooperative behavior in a variety of settings. It promises to be an extremely effective means to reducing the likelihood of conflicts between parties in the university-treatment setting partnership as well.

Student Behavior

By tradition the university student has been explicitly reinforced for behaviors which set her/him apart from the community. In emulation of the medieval scholar and the eccentrics of early twentieth-century science, the student falls into a leisurely, nonconforming style of living which s/he supposes to be conducive to learning and expressive of deep thought. These behaviors are sometimes a severe impediment to professional and client relationships. The student can be contentious and cause disputes. S/he will argue for the sake of arguing. Everything must be questioned. Nothing is taken for granted. While these behaviors may be laudable in the classroom and among peers, they are often punished in an applied setting where the emphasis is on tact and persuasion and where more experienced heads have divined that attitudes are seldom changed, and can in fact be unalterably set, by argument. The professional usually knows to wait for appropriate moments when, without the heat of argument, attitudes can be gently nudged in a given direction. This takes practice and maturity.

Students sometimes have a marked disdain for schedules and calendars. The university classroom is a loose place where professors allow three free cuts and take frequent professional "walks." In the applied setting schedules are all important. Effectiveness often is a direct function of the duration of staff-client interaction. What is more, clients must be managed and supervised continually. An absence among the staff can wreak havoc and even put clients at risk. An unannounced or unexcused absence, let alone frequent absences or tardiness, is not tolerated in the professional setting.

Often the student tends to be a dilletante whose commitment to a particular activity is selective, tentative, s/he may change majors at any time and may seek a university degree in bits and pieces, attending some semesters, working others. Characteristic of the helping professional is a commitment to the profession. Anything less is seen as dereliction.

Student behaviors can be modified, and in fact most students adjust very quickly to the patterns of conduct required of a staff member in a treatment setting. Nonetheless, the relationship between the university and the institution is delicate enough that procedures which might play a role in hastening and insuring student adjustment are usually worth the additional effort.

One procedure which is usually standard practice in the institution is the orientation of volunteers by staff supervisory personnel. Orientation usually occurs once at the beginning of the year (or semester) and often includes handbooks and guidelines for the volunteer; tours of the setting; brief in-service training sessions; and verbal instructions, warnings, and advice. In the ideal case the practicum supervisor would attend or participate in the orientation. Without the orientation mistakes would certainly be made by the practicum students with predictable consequences, and the practicum supervisor may be called to account for the error, in extreme cases, the practicum arrangement may be jeopardized. Volunteer orientation is essential in managing student behavior, but it has its limitations.

A powerful adjunct to the management of student behavior in theory is the course grade. The professor turns in a grade for each student at the end of the semester which is designed to reflect student performance in his course. In the case of the practicum, students who are frequently late or tardy, who are poor at following instructions, or who have bad work attitudes would simply be threatened with a low grade in the practicum. However, the institutional staff and program run on a "perform or leave" basis. There is little tolerance for the unpredictable or abrasive personality. It would be difficult for a practicum supervisor to convince the staff in a treatment setting to have patience with a poorly performing student until the end of a given semester, at which time he would be punished for his misbehavior by receiving a low grade for his practicum work. Instead, the practicum supervisor would likely be asked to withdraw the student from participation in the treatment program the moment her/his inappropriate behavior becomes apparent. Too many withdrawals, of course, would decimate the practicum. This would generate ill feeling among the students, making it more difficult to recruit other students for the practicum, and leave the treatment setting staff short of volunteers. One preventative measure is for the practicum supervisor to spot trouble before it gets too serious and talk to the student involved; however, verbal advise and warnings go only so far. In any case, the threat of a bad grade for poor practicum performance cannot be expected to guarantee smooth and consistent student adjustment to the practicum experience.

What then can the supervising professor do to maximize the professionalism of his students? The answer is in extensive training of students before the practicum experience, through orientation at the beginning of practicum work; a complete and candid discussion of goals from the standpoint of both the institution and the university; a written contract specifying beforehand the expectations of both parties; and frequent meetings involving staff representatives, students, and the supervising professor.

Use of University Students in An Applied Setting: An Example

The following is a description of the use of university students in an applied setting, the Richmond State School in Richmond, Texas. The university students are all undergraduates attending the University of Houston. Though this description is specific to the needs of both institutions, it is hoped that the model presented can be adapted to fit the needs of various institutions.

Richmond State School operates a summer program where students replace regular staff as the staff goes on summer vacation. The problem with summer personnel in the past has been that valuable staff time must be taken to supervise them, placing a heavy burden on an already short-staffed institution. It was customary to assign summer help menial, custodial, or maintenance-type tasks which required no pretraining and which offered students no learning experience or the residents any form of treatment.

But the institution needed trained summer help, especially personnel trained in social learning theory and behavior modification, in order to replace temporarily the vacationing staff. At the same time, the University of Houston was offering several undergraduate courses which interfaced well with the specific needs of Richmond. These courses were an introduction to behavior modification, a course in behavior observation and applied behavior analysis, and a course in mental retardation. The reading program for a basic course in behavior modification as a prerequisite for student practicum work in institutions is included in Appendix A, and those wishing to prepare such a course may consult with the authors.

Through a series of negotiations implemented by a group of undergraduates requesting a field experience course, discussions were initiated with Richmond School as a possible field resource. It is clear that progress would not have been made had not both institutions labeled these needs and determined that the other institution could respond to them. A basic role of the supervising professor is to meet with students and allow them to discuss institutional issues. At these meetings the professor tempers his students by reflecting on the impact of unknowning change and some of its by-products. These meetings also help to develop clinical skills and help avoid untimely confrontations between student and the institution. Where there are legitimate problems, the supervising professor can help run interference for the students and act as intermediary.

As previously mentioned, the needs of universities are to train and supervise students, conduct research, and provide community service. The needs of institutions are to create responsible employees; recruit new talent; be aware of new techniques; and to provide quality treatment, technical skills, and clinical skills. The university wants its students trained in real life settings and wants its students to serve the community; the helping settings want responsible individuals who can provide quality treatment. Students can fit this role as apprentice professionals--they do have the academic background but do not have the consulting or clinical skill that is a major part of the formula for being a good teacher or therapist. The institution must make a commitment to provide the clinical experience. In return it will receive a group of bright, excited academics who will be able to work on existing programs and even create new ones.

The University of Houston has been working with Richmond State School for the past two summers providing the institution with summer student field placements. The experience has been rewarding for residents, students, and personnel of both Richmond and the University of Houston.

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Appendix A

READING PROGRAM

SECTION	TOPIC	REFERENCE
1	How to survive Psy 473	Course Outline
2	Operant Behavior/Operant Conditioning	Chs. 3 & 4
3	Operant Discrimination/Chaining	Chs. 5 & 6
4	Respondent Behavior/Ecology	Chs. 2 & 8
ELIGIBLE TO WRITE LEVEL ONE EXAM		
5	Social Transactions/Problem Behaviors	Chs. 9 & 10
6	Behavior Disorders/Behavior Management	Chs. 11 & 12
7	Behavior Modification & Behavior Therapy/Classroom Management	Chs. 13 & 14
8	Conclusion/Introduction	Chs. 15 & 1
ELIGIBLE TO WRITE LEVEL TWO EXAM		
9	Behavior Technology/Mental Institutions	Ulrich: Pp. 16-49 81-105
10	Institutions for the retarded/Outpatient Clinics	Pp. 120-181
11	Special Ed./Non-institutional/home settings	Pp. 181-230
12	Public Schools	Pp. 231-283
ELIGIBLE TO WRITE LEVEL THREE EXAM		
13	Implementation	Pp. 325-366
14	Patterson: "Families"	Entire book
15	B. F. Skinner: "Beyond Freedom and Dignity"	*Psychology Today 1971
ELIGIBLE TO WRITE LEVEL FOUR EXAM		

* On reserve in the Library

A MODIFIED OPTOMETRIC EVALUATION OF THE MULTIHANDICAPPED CHILD

Rocky Kaplan

A 1969 estimation (Calvert, 1969) revealed that approximately 1,000 to 2,000 children in the United States were afflicted by the world-wide epidemic of rubella during the period from 1963 to 1965. Most of these children were born with both severe hearing and vision impairments. This presentation concerns the investigation of the visual impairments in the multihandicapped child and will review a modified optometric evaluation of the multihandicapped child and relate some of the aspects of visual functioning in this population.

The author recommends that both an ophthalmologist and an optometrist do an evaluation of the multihandicapped child because the multihandicapped child usually demonstrates problems that are amenable to consultation from both professionals. Efron and DuBoff (1975) state that the ophthalmologist is concerned primarily with the "cause, treatment, and the prognosis of the eye condition from a pathological point of view." The optometrist, on the other hand, "is concerned with the sensory and visual motor skills." When assessing visual functions, essentially three areas should be considered: (1) visual discrimination, (2) visual-motor functioning, and (3) perceptual functioning.

Visual Discrimination

Visual discrimination simply means how well can one see, and traditionally this has been used as a method to assess visual functioning. Since most of the multihandicapped children are not able to respond verbally to a Snellen Chart or any other form of subjective testing, it is understandable why the majority of these children have been described as "blind." For an individual to qualify as being statutorily blind, his central visual acuity only has to be 20/200 or less in the better eye with a correction. If the child is unable to respond to subjective testing, it is very easy to give a rating of 20/200. To overcome the subjectivity of testing for visual discrimination, the vision specialist must use objective methods of assessment. Once a determination has been made of how well the child can see, the next step is to provide a peripheral aid either in the form of spectacles, contact lenses, or a magnifying device which will improve the ability to discriminate visually.

Visual and Motor Functioning

Learning takes place by the interaction of vision and other sensory and motor systems. The optometrist evaluates how well the eyes track, converge, interact with the hands, and the general motor system. These activities are visual skills which have to be given the opportunity to develop. Where there is lowered visual acuity or discriminating ability, these skills may not have been given the opportunity to develop. It is at this point that vision therapy procedures can be introduced into an educational program to assist these children in the development of the highest possible level of visual efficiency.

Perceptual Functioning

If the first two areas are functioning at a relatively high level, the information cortically has the opportunity to be processed. Visual perception can be defined as "getting meaning from what one sees." Actual training of vision perception will be highly dependent upon the level of the multihandicapped child.

The majority of children who are multihandicapped as the result of the rubella epidemic have had some abnormality of the lens of the eye, commonly known as cataract. This would have necessitated cataract removal or aspiration, and in most cases the need to replace the lost lens by a high-powered spectacle lens. In addition, the child no longer has the ability to change focus for the close viewing distance. It is therefore imperative that a near prescription be provided in order for the child to accurately discriminate detail at the close working distance.

An external examination of the eye determines if there is any obstruction to light entering the eye. Very often after cataract surgery, the pupil of the eye is either distorted in shape and/or displaced. It is then important for the vision specialist to inform the residential staff of the obstruction in a certain direction of gaze. The ophthalmologist will evaluate the health of the retina. When a pathology of the retina occurs with a resultant loss of visual field, the educational staff should be cautioned not to present any material in that particular field of vision.

The first step in determining the intactness of the visual pathway is to determine if the pupils react to a bright light. When a flashlight beam is held approximately 3 to 5 inches from the eye and the beam is directed toward the pupil, an immediate constriction should result. When the flashlight beam is removed, the pupil should dilate. It is relatively positive that the nerve supply from the brain to the eye is intact. This procedure is performed on both eyes, and at the same time a judgment of the alignment properties of the two eyes is made. Very often when there is nerve damage, one or more of the eye muscles might be affected, producing an outward or inward deviation known as a strabismus. For example, if there is a constant inward turning of the right eye, the vision specialist should inform the staff that materials should be presented to the left eye most of the time, since it can be assumed that the right eye is not participating in what is known as binocular vision.

Calvert, Reddel, Jacobs, and Baltzer (1972) reported that multihandicapped children are easily distracted by any sort of light within the immediate environment; the author has used this to great effect in his optometric evaluation of the children in the Richmond Project. Using an inexpensive flash strobe, the author has the child sit in a darkened room and in each of the visual fields has "zapped" in the direction of the child. This evaluated the presence of the basic innate fixation reflex. If the child's visual pathways were relatively functional, he would initiate an immediate searching pattern in the direction of the flash of light. The author also used a brightly lit bulb, painted in the form of a smiling face or a clown, and moved this stimulus in a horizontal, vertical, and oblique direction to determine the basic ocular tracking ability of the child. When the child was unable to fixate or track a target, a bell was introduced to determine if an auditory stimulus would reinforce or encourage visual search patterns (Kaplan, 1976).

By this stage the vision specialist is ready to determine the visual discriminating ability of the multihandicapped child. The usual method to evaluate visual acuity is on a subjective level where what is known as a static acuity measure is derived. Since at least 90% of the children examined were nonverbal, the author resorted to a dynamic method to measure visual acuity. This consisted of rotating alternate black and white stripes in front of the child, which produces an involuntary searching motion of the eye known as optokinetic nystagmus. The nystagmus will only occur when the child is able to resolve the detail of the black and white stripes. So, by simply observing the oscillation of the eyes and by moving the black and white stripes farther and farther away from the eyes, a measure of dynamic visual acuity can be mathematically determined. Fortunately, a group in England has recently introduced the Catford Visual Acuity Apparatus, which works on the same principle, and all the vision specialist has to do is read off the dynamic visual acuity measure according to the size of the stimulus target used. This means that a report on an optometric evaluation could contain a statement such as, "John has a dynamic visual acuity measure of 20/50 for the right eye, and 20/40 for the left eye recorded at a distance of 60 centimeters." This 20/50 and 20/40 acuity measure respectively should not be confused with the traditional static visual acuity measure. Instead, this should be used to advantage where the specialist could translate the Snellen fraction into an angular subtense measure, and then, for example, he could say the material to be used in training should be at least 4 inches in diameter at a distance of 60 centimeters in order for the child to be able to discriminate.

An objective procedure known as retinoscopy is generally used to derive the prescription to compensate for the refractive status of the eyes in the multihandicapped child. Since the prescription is generally quite high, trial lenses are placed in a trial frame and qualitative responses are observed. Thereafter, "magnification aids and/or focusing lenses" are introduced until a maximum qualitative improvement is observed at the close distance. In consultation with the educational staff, the author has been able to design specific prescriptions for each child depending on what activities are being performed in the residential setting during classroom work. On occasion, separate glasses have been prescribed for the close distance, in addition to a pair of bifocals. In other words, when the child wears his glasses designed for the close distance while doing his educational activities and has a tendency to look up into the distance at a light or movement, objects will be unclear and his attention will be redirected to the activity at hand.

To further explore the vision care that can be provided for multihandicapped children, I would like to cite some specific case examples.

The first case, "R," had absolutely no problems in adjusting to his near reading glasses, and whenever they were not being worn, he would love to manipulate them before his eyes to obtain the reflection from the overhead light bulb. It would appear that R's visual performance does improve when he is wearing either his near prescription or bifocal glasses; however, we have been unable to quantify the improvements made with glasses compared to a "no glasses" situation. In order to achieve this, a third pair of glasses was arranged for which has no prescription but is in an identical frame as the other two pairs. A new activity will be taught and performance will be compared with no prescription versus prescription spectacles. In addition, R is being taught to motorically differentiate between up-down and left-right on a visual level. Once he has learned these imitation skills, it may be possible to measure a subjective static visual acuity.

The second case, "T," has a relatively high level of visual functioning; however, previous records indicated that prescribed spectacles were not being worn. T had a tendency to alternate the use of either eye; for example, she would tend to use her right eye for close vision and her left eye for looking into the distance. The first stage of the vision care program for her was to prescribe a best sensory spectacle prescription. These glasses were to be worn constantly and a program to teach her to wear the glasses was initiated. T was included in a program of eye movement training, such as the following and fixating training procedures. Since T had a high level of visual functioning, she was considered a perfect candidate for a program of fine motor discrimination skills, eye coordination, and other programs. These skills were a prerequisite before she entered the prevocational program.

Case 3, "H," was born with cataracts, and because these were removed at approximately one year of age, an assumption can be made that a certain amount of sensory deprivation did take place. H typifies the child who was very used to being "out of focus" without glasses. When she received her new spectacles, she had to receive training on how to aim her eyes and ultimately to see clearly once more. At that time there was no motivation for H to see clearly

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because she had never learned to see clearly. This was borne out during the initial examination where H simply refused to pay attention to the moving spot so that no dynamic visual acuities were recorded on the Catford device. An eye contact program such as observing her hand was introduced, and she was encouraged to continue looking at her book through the near portion of the bifocals.

Case 4 was "S." S was extremely near sighted and had not demonstrated an appropriate reinforcer. With her present pair of glasses, she demonstrated a dynamic visual acuity measure of 20/40 on the Catford Visual Acuity Apparatus when placed at a distance of 60 centimeters. Since she was highly dependent on her glasses, a second pair was ordered. This prescription was considerably weaker than her present pair and it was ordered in a blue frame. This weaker prescription was designed to be worn for all near activities, and as a reinforcer whe was encouraged to put on her present pair, which was in a brown frame, and she was allowed to look off into the distance at a television set. This provided an appropriate auditory and visual reinforcement.

In summary, working with children who are multihandicapped makes it clear that vision perception is learned. As Efron et al. said, "This is the area of vision in which a deaf-blind child can make the most progress." Conventional optometric procedures do not always permit disclosure of the quantitative data usually necessary to provide vision care. Research is required to develop steps to train these children to respond subjectively. As evaluation procedures such as electro physiological studies (Merin, Shapira, Szabo, and Auerbach, 1973; Shapiro, Szabo, Nowlin, and Auerbach, 1973; Stillman, Moushegion, and Rupert, 1976) become more sophisticated, we will be able to provide more comprehensive care for these children. Hopefully the information reported here can be applied to some of the multihandicapped programs throughout the country.

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PARENT SERVICES AS RELATED TO THE PARENTS OF THE DEAF-BLIND CHILDREN IN RESIDENTIAL SETTINGS

Jill Gray

The Texas Education Agency Regional Center for Services to Deaf-Blind maintains, as one of its operational goals, a continuous effort to provide a systematic program of family support and training. For those parents of children in residential settings, as well as for those parents of children living at home with parents, guardians, or foster parents, the plan for service is basically the same if a child's name is on the Center's deaf-blind registry and if the names and addresses of the legal guardian are known to the school and hence to the registry.

The Center has learned from experience that parents need frequent assistance from the teaching staff and cannot frequently travel long distances for lengthy workshops. Throughout the program year 1975-76, local programs have been urged to plan activities such as workshops, conferences, meetings, respite care, and other activities to meet the needs of the parents of children in their program. Technical assistance and resources were offered to those programs in planning for their own parents.

In addition to this, all parents of all registered deaf-blind children received the Deaf-Blind Program Newsletter, a quarterly publication designed to establish a continuous communication to parents throughout the state. The parents are invited to write or call the newsletter staff to ask questions or share information. Although only two issues have come out to date, the Center hopes that parents from all programs will feel that this is a system of communication for them for sharing and receiving information.

For the past three years all parents of children on the deaf-blind registry have been invited to participate in a statewide Parent Education Project (Project PEP), held in Austin. Travel, lodging, and per diem were provided for all parents attending. Each year a substantial number of parents of children in residential settings attended.

When special workshops are available to Texas parents of deaf-blind children, the policy is to contact the child's program staff and go through that channel for the selection of representatives or notification of parents.

Beginning in program year 1976-77, the system for delivery of services to the parents from the Texas Education Agency Regional Center for Services to Deaf-Blind will be the same as delivery of other educational services, i.e., the state agency will work with the Regional Education Service Center to provide services to the local program. These services will be aimed at meeting the needs of families at the local level. The role of the consultant for family involvement at the Regional Center for Services to Deaf-Blind will be facilitation and technical assistance to the service centers as they provide services, plus technical assistance and provision of resources to deaf-blind programs as they serve parents.

Because of the uniqueness of each individual child and each family, it is necessary that the training in managing that child in the home be consistent with that in the classroom and residential setting. The training must, therefore, be done by the child's teachers. The Center is trying to support teachers in that effort.

During the immediate past program year the following activities were successfully attempted for parents in programs serving deaf-blind children:

Behavior management workshops (One model met one night per week for five weeks. Another model met five consecutive nights.).

Work nights to make equipment for classroom use.

Workshop on neurological aspects of the deaf-blind child.

Language development workshop.

A weekend retreat for families, including the deaf-blind child, for sharing, training, and socialization.

Workshop with physical therapist and the parents looking at normal development and the problems of their children.

Each of the above activities were planned with the needs of a particular parent group in mind. The Center believes in and is trying to support the idea of the family spending time observing the child in his/her program and is striving to carry through with this programming at home.

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A MODEL FOR HOME TRAINING IN A RESIDENTIAL PROGRAM FOR MULTIHANDICAPPED CHILDREN

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When a child's behavior is such that he is labeled as deviant, the parents' role expectations for the child change. The child is often excused from responsibility for his own behavior and is not permitted to experience the "natural consequences" of his behavior. Additionally, few contingencies are placed upon the child's rewards. When severe behavior disturbances appear, parents are usually unequipped to deal with the problem. As the child's behavior deteriorates still further, his control over the household often increases through inadvertent reinforcement of demanding, noncompliant, and disruptive behavior. The child appears satisfied as long as others in his environment do what he wants and is consequently less of a problem in the home (Kozlogg, 1973). When the child's behavior deteriorates to a point at which his parents can no longer cope with him, he is often institutionalized. At this point, the primary task to be faced is that of teaching the child new patterns of behavior.

This learning of new patterns of behavior constitutes resocialization. In order to stablize new patterns of behavior, the primary agents of socialization, the parents, must also learn how to initiate and manage functional exchanges with their child. Until recently, parents were considered incidental or even detrimental to the rehabilitation of their children. This was perhaps an unfortunate consequence of the theories implicating parents in the etiology of severe childhood behavior disorders. At present, however, efforts are being made to train parents as teacher-therapists in programs for rehabilitating their children.

Two of the factors which have stimulated research in the training of parents have been the difficulty of generalizing positive behavior change to environments outside of the professional treatment situation and the related difficulties of maintaining behavior change (Kozloff, 1973). A number of studies have noted that there is a great deal of difference between a controlled laboratory school and the home. Results of these studies also indicated that beneficial changes produced in the school might not be maintained if parents were not trained to promote desirable behavior and decelerate undesirable behavior in the home (Williams, 1965; Wolf, Risley, & Mees, 1966; Patterson, McNeal, Hawkins, & Phelps, 1971; and Howard, 1970).

Lovaas (1968) noted that when returned to their pretreatment environment, the prosocial behavioral repertoires of some children began to deteriorate. Similarly, Ayllon and Azrin (1968) point out that as the duration of a patient's institutionalization increases, there is both an increasing disinterest in him by friends and family as well as an increasing deterioration of classes of behavior essential to his reintegration into the community. It would appear, then, that significant others in the child's home environment require training in order to support and strengthen behaviors enabling the child to function in the "natural community" (Baer & Wolf, 1967). There is presently an emphasis on parents playing an active role in their children's treatment, not as patients undergoing therapy along with their children, but as teachers or co-therapists (Kozloff, 1973).

Not only can parents be trained to be effective teacher-therapists in the laboratory, but more importantly, they can be retrained as parents. The generalization of exchange principles to the home and the subsequent modification of basic patterns of parent-child interaction can result in the more efficient socialization of the child within the home.

Because the behavior of each individual is reciprocally determined by the behavior of others, the effect of natural contingencies on the complex interactions of human communication is to establish patterned behavior exchanges, stimulus-response-consequence patterns. When a behavior exchange is established as a predictable recurring sequence of observable events, it can be viewed as a factor of socialization and can subsequently be analyzed into relatively predictable patterns of behavior exchange which influence and affect the participants.

The system of behavior exchanges may reinforce healthy, adaptive, personally satisfying behavior or pathological, painful, even self-destructive behavior. In the latter instance, it is necessary to isolate maladaptive behavior exchanges and alter or eliminate them. Alteration requires the finding of covariance between the behaviors of individuals and the identification of strategies for changing the response patterns of one or more of the individuals. In applying behavior exchange techniques to a family therapy situation where the presenting problem is the behavior of the child, it is often necessary, functional, and expedient to change the behavior of the parent.

The treatment program to be described attempts to establish that educational systems based on the principles of exchange theory and behavior analysis offer an effective treatment for some of the principle behaviors that disrupt parent-child interactions in the home.

This case history illustrates an approach to the development of appropriate parent-child interactions, with assessment and intervention focused on the interactions of a multihandicapped child and his parents. It was felt that insufficient generalization was occurring between behavior exhibited at school and behaviors displayed at home. More specifically, progress in rate reduction of tantrum and self-hitting behaviors at school was not being observed in the home. It was believed that by establishing more consistency between contingencies at school and at home, a greater degree of transfer of training could be achieved.

Method

Subjects

A 9-year-old, deaf-blind, Down's Syndrome male and his parents were subjects of this study. Although the level of his hearing could not be determined on a standard audiological test, he seemed indifferent to most sounds. The child had partial vision resulting from a congenital cataract secondary to maternal rubella. Severe head banging resulted in a progressive traumatic cataract which culminated in a complete loss of vision during the interval covered by this study. Inappropriate behaviors included tantrums and self-abuse. The child had been institutionalized for two and a half years prior to intervention.

Procedure

A pretraining description of the child and home was based on general observation and initial baseline. From this data were projected the purpose and goals of intervention. The training program was then conducted in several phases.

Preparatory Training (Training in the School). Prior to the home intervention sessions, the parents were asked to read introductory material on behavior analysis. This material consisted of *Families* (Patterson, 1971) and *Elementary Principles of Behavior* (Whaley & Malott, 1971).

The next phase involved the mother in working with another child during structured one-to-one training at the school. This was accomplished in three steps: (1) observation, where the mother simply observed several sessions of in-progress training; (2) data collection, where the mother assisted a staff member by collecting data during training sessions; and (3) contact, where the mother worked directly with the child while a staff member took data and coached.

Working with another child allows parents an objectivity that is impossible when dealing with their own child. More importantly, it allows the participants to interact without a history of established social exchange patterns so often present in parent-child relations. The parent gains confidence in his ability to control behavior and in his ability to function as a teacher to the child.

During phase three, the interval between the home baseline sessions and the initial home intervention session, the mother assisted the therapist in working with her own child in structured one-to-one intervention sessions at the school. The mother attended these sessions one afternoon per week for four weeks. These sessions consisted of activities that could be generalized to the home. The child was in the latter stages of a toilet training program at this point. The toilet training format provided an opportunity for parent-child interactions involving other programs and activities during the required latency intervals between toileting responses.

Exchange Management Training (Training in the Home). Eight home intervention sessions of four to eight hours each were conducted during a three-month period. Each session included the modeling of exchanges between the therapist and child, the coaching of parent-child, exchanges, and informal discussions of the program's progress.

Prior to the initial home intervention session, the parents were given a tentative prescription for restructuring parent-child interaction in the home. An example is shown in Table 1. The content of the prescription was discussed and the participants agreed to follow it as nearly as possible. Possible alternatives were discussed for use in situations where the child's level of self-abuse might result in substantial injury. The family was asked to make copies of the prescription and display them in several parts of the home for frequent review.

An additional aid, an alarm timer, was used in the home intervention program. The parents were instructed to reset it every 15 to 20 minutes when the child was at home. The alarm signaled the parents to enact an exchange with the child either by directive statement or through physical prompting. The resultant appropriate exchange would then be rewarded, creating an artificial history of positive social exchange in the child in order to counter his previous history of negative social control.

Building Play Behaviors. Constructing a history of appropriate behavior began with teaching the parents how to teach the child to play. Techniques for training and motivating the child to work with certain toys were modeled, and both parents were coached in how to initiate the exchange by leading the child to the toy and presenting simple, consistent, directive cues. They learned to reward him frequently and to fade rewards, requiring progressively more appropriate behaviors for each reward, as well as how to vary reinforcers to avoid satiation. Imitative behaviors were also used in the home setting, proving uniquely convenient because they require no special setting.

Decelerating Inappropriate Behaviors. While the rationale behind the general therapeutic design for this home intervention program included deceleration of inappropriate patterns of responding as a goal of the techniques for building play behavior, other more direct strategies for decelerating specific negative behaviors were also included. Throughout the eight sessions of modeling and coaching, the parents were shaped to practice the prescriptions given them.

Home Baseline. Baseline measures were taken on two consecutive days. Data taken on the child's behavior were dichotomized into two categories, Appropriate and Inappropriate. Two classes of parent behavior, Exchange Signals and Reciprocations, or behavior cues and behavioral consequences, were also recorded. Each entry consisted of the interaction of a child behavior and a parent behavior, which constituted an exchange. These broad categories were divided further into more specific subcategories or response classes.

Table 1

Behavioral Prescription

Child's Behavior	Parents' Response
PLAYING (or any approximation of appropriate behavior	Place toys (play school mail box, simple puzzles) under coffee table in front of sofa. If child starts to play with a toy, reward him verbally and socially and with food or coke at intervals while he is playing. Regularly prompt him to play with toys and reward this prompted play.
PULLING OR PUSHING for consumables or television	IGNORE. Set aside several periods of the day when he can work for snacks, by working simple puzzles, etc. Lead him to the table and prompt him to work. Reward lavishly at first. Print sign for "eat" before each presentation of consumables and allow him to turn on TV contingently ("After you have worked this puzzle, you may turn on the TV.")
SIFTING (cards, leaves, or debris)	Remove object of activity or child (whichever is easier). Do this quickly and without speaking. Then say, "As soon as you have _________(any simple activity), you may sift this."
SHRIEKING OR BIZARRE SOUNDS	IGNORE
TANTRUMS	IGNORE
SELF HITTING	IGNORE
CLINGING	Gently disengage and push away. You may sit, if this is appropriate, and allow him to crawl into your lap contingent upon performing some simple task (hand games, puzzles, turn around, etc.) Do not allow him to cling while walking. You may hold him by the hand, arm, or shoulder at an appropriate walking distance.

Results and Discussion

Baseline data were obtained in two settings, living room and mealtime. Data indicated that the child's rate of inappropriate and self-abusive behavior was highest during meals. He was reinforced for approximately 20% of his self-abusive behavior at meals (VR-5), but for only about 10% during living room play (VR-10). The data also revealed that a denser schedule of reinforcement was in effect for the parents for rewarding these behaviors during meal time. The child's rate during baseline for self hits was found to be 60 responses per hour at the table, compared to 18 responses per hour in the living room. The therapist observed an escalated rate of tantrum and self-abusive behavior in the presence of any stimulus with which the child had associated a high density of reinforcement.

A lack of appropriate behaviors on the part of the child in the home was also indicated by the baseline data. The child displayed deficits in the areas of self-help skills, appropriate play, and compliance with directives. He obtained rewards from his environment and controlled the behavior of others by throwing tantrums and self-hitting. A therapeutic strategy designed to teach new, more appropriate behavior patterns by which the same rewards could be obtained was inferred. A strategy which involved withholding rewards following specific inappropriate behaviors was also projected. The implementation of these strategies was to be accomplished by modifying the behavior of the parents, which was seen as the primary maintaining factor in the behavior of the child.

Post-Baseline

A follow-up probe of baseline items was conducted five months after home intervention. The results of this probe were encouraging. The child's rate of self-abuse had decreased by a factor of nine, occurring at about 11% of the initial baseline rate; loud crying out, a measure of tantrum behavior, was reduced by a factor of seven, 14% of the initial baseline rate; and jerking was reduced by a factor of two. By far the most promising aspect of the probe data was the increase in positive exchanges by a factor of 20, from one per three hours of prebaseline observation to a postbaseline rate of 6.9 per hour. The parents' rate of initiating exchanges with directives increased from 1.5 to 10.7 per hour, while the rewarding of appropriate behavior now occurred on a VR-2 schedule. Conversely, they were not observed to reward a single inappropriate behavior during the follow-up phase.

New Behaviors

At the time of the initial home observation, the child was responding to three action cues in the classroom, presented through the use of total communication. He did not respond to these cues outside of the school setting. Seven months later, he was responding to each of 17 verbal directives as they were presented at home by his parents. Manual signs were no longer necessary.

Maximizing Parent Motivation

Correct timing of the home intervention program is critical to the success of the technique. In attempting to initiate a home program, the therapist and family must be aware of the costs. The family must be prepared to: (1) open their home to an outsider, which can be anxiety-producing, especially in homes where nonfamily visitors have become a rarity; (2) increase their work load, which is a significant consideration in a family with several children; and (3) change old, established behavior patterns and methods of coping with child centered problems. It is much easier for the therapist to describe intervention techniques than it is for parents to begin implementing them consistently at home.

These factors make home training a demanding enterprise for the parents both physically and emotionally. Parent maintenance in the program can be insured by rewards. Obviously, the greatest reward the therapist has to offer is improvement in the child's behavior. Home generalization of appropriate behaviors already learned in the school is the most efficient method for obtaining a high density of reinforcement for the parent during the initial home intervention sessions. For this reason, when working with the severely retarded multihandicapped, one should realistically anticipate that any home intervention program begun prematurely, before significant progress in classroom training has been accomplished with the child, is unwise. The child should exhibit a relatively high ratio of appropriate to inappropriate behaviors in the classroom before generalization to the home is attempted.

Parents can learn to use rewards intermittently to maintain desirable behaviors, as well as to withhold rewards contingently to extinquish undesirable behaviors. They can learn to vary rewards to maintain the child's attention and compliance and to prompt new behaviors and generate creative new exchanges. In short, they can learn how to control their child's behavior and, perhaps more importantly, how not to be controlled by it.

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PERSONAL EXPERIENCES OF THE MOTHER OF A HANDICAPPED CHILD

Gay Rutherford

I want to relate my experiences as a parent of a child who is severely handicapped and to explain when and why a decision was made to place him in a residential facility. I also hope to present a strong case for the preservation of every human being.

I did not choose to have a child with handicaps, but I do love him very much and have always wanted an opportunity for him to reach what potential he has.

Obviously, no ideal situation can be achieved for me because I would like to have a perfectly healthy, "average," 11-year-old boy. Since this is impossible, I do expect David's positive values to be maximized and that people think of him, feel toward him, and care for him not as a severely handicapped child but as a person who happens to be handicapped. Every human being is a valuable one and should be given an opportunity to reach his potential. What does faith, hope, and audacity have to do with this? Be assured that without a great deal of faith and hope and a tremendous amount of audacity on the part of parents, children with severe handicaps would have little opportunity for success.

After David's birth I concerned myself with keeping him alive and being thankful for living in a city as progressive as Houston so that we could get the help we needed for him. Little did I know that society had not come far enough to accept a child who was going to be as handicapped as my son. During the years following David's birth I found that most everyone having anything to do with him always wanted to stress his handicaps. As a result of this, there were many negative attitudes and very few opportunities for him to be trained in basic life skills. It was suggested on several occasions that David was not a productive member of society and that the money, time, and energy available should be spent on those who were considered productive members of society. Children with less severe handicaps were accommodated in the public school. David was totally ignored by our school district, and I had to insist repeatedly that he not be ignored by agencies providing special programs. The quality of his life would depend on my very firm conviction that feeding himself alone was better than being fed; learning to walk was better than being nonambulatory; going to the bathroom alone was better than wearing diapers all of his life; and relating to others and being happier with himself was far better than being totally frustrated and dependent on someone else.

I never considered myself an audacious person, but I suppose to many I must have been. I still do not feel that I have asked any more for David with his handicaps than I would have expected if he had no handicaps. I simply wanted for him a chance--a chance to grow and reach what potential he had. We attended many agencies in Houston who dealt with children who were handicapped. Each agency, one after the other, would provide some type of program and would almost immediately establish that David was not capable of benefiting from what it had to offer.

Have you ever been in a situation where you were trying your best to do what you thought needed to be done and someone was constantly telling you that you would fail--that what you were trying to do could not be done? This is the attitude I found among many professionals dealing with me personally. It was extremely frustrating to me that so many people thought that David was not capable of doing anything but lying flat on his back 24 hours a day. By the time David was 5, he had a brother and sister. I was told that I should think of my other children and David's effect on them. I often wondered why they never said I should think of all three of my children. The harder I tried to be a successful parent, the more I was told it was impossible. According to some, a family with a child who was severely handicapped would not survive as long as the child lived at home.

The thing that seemed to help me the most during this time was becoming actively involved in a parent organization. Not only did I discover that I would survive, I even got my sense of humor back--something I had lost several years before. We continued to seek help in the community and time after time we were told that David needed to be placed in a residential facility--a facility that offered little more than custodial care.

By the time David was 8 years old it became exceedingly clear that our community was still not ready to accept my son. It was becoming more and more difficult for me to care for a child who needed 24-hour care, two other lively children, and my home. My nerves, to say the least, were a bit on edge, yet I continued to resist placing David in a residential facility. Had the program that David is now in already been established, the decision would have been an easier one. However, to send him away for someone else to take care of was something I could barely stand to think about. David needed a much more structured life than we were able to give him, and it was because of this that I finally decided, program or no program, life for David might be happier if he were in a residential facility. This was the most difficult decision I have ever made in my life, but certainly a loving decision. There was no doubt in my mind that I had done everything possible to help David. I had the audacity to ask for the best for my son (much to the surprise of some people) and still he needed more than the community would give him.

However, before David moved to Richmond I did receive a most precious gift--something that made all of our previous years seem worthwhile. At the age of 9, David took his first steps alone. This was something that most everyone felt he might never do. David's courage and determination would make most of us seem like failures.

I am happy to say that the decision to move David to a residential facility has been a good one so far. Approximately six months after he moved to Richmond State School, an outstanding program was developed for children like him. For the first time I feel David is finally receiving a program appropriate to his needs. I learned a long time ago that as a parent of a child who is handicapped, there is never a day to take an easy breath. There is always a fear that what you have will be taken away. This is the way it was in the commuinty; hopefully, it won't be this way at Richmond.

The attitudes that exist in this program are attitudes that I had looked for in the community, attitudes that these children are human beings with special needs but they are capable of being helped. If for some reason the child does not succeed when they try to teach him, they do not immediately assume that the child can't learn--they just try even harder. For someone to love and care for David and not assume that he is a total failure is like a breath of fresh air.

During the past 11 years we have come a long way. Although the sadness of David's handicaps is an everlasting one and I still at times feel sorry for David and me, I look back and remember his courage, his determination, and his achievements. I also remember those who looked at David and the other children in this program and thought of them first as people and provided them with this marvelous opportunity to live more productive and useful lives. For all of this I am extremely grateful.

To say that all children who are severely handicapped should be in a residential facility is a statement that I am not prepared to make. For children like David it is certainly, at this time, what has to be.

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BUILDING MORALE BY SHARING

Jim George

Public school people have morale problems, as do institutional people, because they have the same basic human needs and are confronted with similar human problems. One thing happened recently that caused a need for new social contracts. This shows that morale in an institution and morale in a public school are examples of human interaction. Increased reinforcement for each other is needed because public school people for years have not had to deal with the kinds of children typically found in an institution such as this one. They have been dealing with handicapped children and are doing a fair job, but the skills and competencies needed in the public school setting are hardly the same as the skills and competencies needed by people in institutional settings in order to be successful.

Every child has the right to a public free education in the least restrictive environment. This means education in the public school. There are many children who are severe, profound, multiple, complex, rare, or inexplicably handicapped, and they are not being served anywhere. They have a right to a public free education. The "Child Find" project was initiated to locate them, and it is expected that 10,000 children will be found in Texas. These are going to be public school clients, not institutional clients.

The state of Texas passed House Bill 1673, which established that the severe, profound, and multiply handicapped youngsters have a right to public education in Texas, and they have a right to that public education on a first priority basis, even before less severely handicapped. One way that public school people, for the past few years, have provided services for some severe kids who were not institutionalized was by contracting with approved nonpublic agencies. THis worked well, but House Bill 1673 also said that the ad valorem tax generated by the public school district has to be divided so as to determine what the pro rata amount being spent on each child in the school district is. All the handicapped children deserve to be benefactors of that same amount of ad valorem tax money. Therefore, if the school is going to contract with a nonpublic agency, the school relinquish that ad valorem tax pro rata share first, before the state gives any money. This has changed the complexion of the contracting business with the nonpublic agencies.

It is also my understanding that institutions are under a mandate to begin to purge from among their residents people who might be able to function or to benefit from a community setting or a less restrictive alternative. This means, of course, that kids will come into the public schools from all quarters and will deserve the quality education that they require.

Think for a moment of how the public school special educator feels about dealing with the deaf-blind, self-abusive, typically institutionalized youngster who may be brought into his or her room next year. They have a real need, a real morale problem.

I had occasion to sit in on a meeting with Sean Finegan, Gordon Bourland, Suzan Robinson, and others. I saw potential for some kind of social contract between two entities--the public education system and the institutional system. We planned very specifically to take the technology that Gordon has put in a staff development package for the different kinds of people working with multi-handicapped kids at a variety of levels. We are attempting to interact with the good things that are going on so that there could be some transfer, some exchange with the public schools. To make a long story short, as a consequence of that experience and the planning we have done in the interim, on July 12 a meeting will be set up in Region X to train public special educators to dealing with severe, multiply, and profoundly handicapped children in a fashion similar to the program which you toured the last hour. We are excited about this at the education service center level for a variety of reasons, not the least of which is that it suggests a uniform or a potentially uniform way to develop staff competencies on a large scale basis in a regional setting. Furthermore, it offers the kind of flexibility which allows for personalization of the exchange of technology into the public school setting. From the feedback we have gotten, we believe that the public school people are going to be as open-armed in their acceptance as we were in our excitement about setting up the program. The reason is very simple. It is associated with the problem of coping. Institutional people have learned to cope, and this is a potentially useful tool for public school people. This effort of exchange is similar in nature to the coordinated effort that was described from a funding point of view by Carleton Wainscott. The problem of dealing with these kids will not be solved simply because Sean and his group will train 50 or 60 special educators in Region X. But it is a necessary step in the right direction. What is needed beyond this is a clearer recognition of the facets in which various societies can interface--like the institutional and the public school societies have begun to interface in behalf of these kinds of kids.

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STARTING A CLASSROOM WITH SEVERELY RETARDED, MULTIHANDICAPPED CHILDREN: YES! IT'S POSSIBLE

James Livermore, Bruce Thompson,
Joe Lancaster, and Ileene Roberts

It has been clearly shown that a multihandicapped child can learn many necessary skills with a small student-teacher ratio such as one-to-one or two-to-one. The one major problem to this approach is that society is unable to provide the funds needed to hire and maintain such a large number of teachers.

The current emphasis on the least restrictive treatment setting will cause many children who are now at home to attend public schools for the first time. The student-teacher ratios in most special education classes for the multihandicapped range from 5:2 to 8:2. Public schools cannot provide the 1:1 or 2:1 ratio necessary for optimum learning. Does this mean that these children will not learn?

We at the Richmond State School Multihandicapped Project say that these children can learn with 8:2 or 5:2 ratios. The knowledge and skills necessary to teach such a classroom can be learned by any teacher. Classrooms at Richmond are not rigid or static, but are continually evolving.

We have a residential program at the Multihandicapped Project for approximately 24 children, male and female, ages 6 through 15. The following labels describe some of the handicaps: blind, deaf, mentally retarded, autistic, micro-encephalitic, rubella, cerebral palsy, mobility impaired, schizophrenic, self-mutilating, and hyperactive. Combinations of the preceding labels have been used to describe each of our children. Our two classrooms are in operaation six hours per day, Monday through Friday.

Initially, all the children in the classroom work on maintenance tasks. A maintenance task is a review of a skill which a child has already learned. With only a small amount of teacher attention, a child may be able to stack rings on a peg, assemble puzzles, string beads, or simply put pegs in a pegboard. During this period of from three to four weeks the teachers concentrated on teaching classroom behaviors to all the children. None of the children had classroom skills at the start of the program.

The classroom behaviors on which we first concentrated our efforts were remaining in seat without crying, sleeping, or yelling; remaining on task and raising a hand at the completion of a particular task. In the classroom, the appropriate way for a child to attain teacher attention was for him to work independently for a short period of time (initially from 5 to 60 sec.) and raise his hand at the completion of task. The children also had to learn some degree of patience because the teacher was not always immediately available when the students raised their hands. Repetitive, self-stimulating, stereotype behaviors are not acceptable in the classroom.

The ideal classroom sequence occurs when the child completes task, raises hand, and then receives both a token and social reinforcement. Next the child re-starts the task. After completing the maintenance task a specified number of times, the child then goes to the free-time area. The specific number of tasks to be completed before going to the free-time area is individually determined by the child's level and the difficulty of the task.

The free-time area is a part of the classroom set aside for a child to engage in self-selected behaviors for 5 to 10 minutes in a low key setting. In the classroom there is a constant demand for on-task behavior. The definite contrast between the classroom and the free-time area allows the children to play ball, spin in chairs, swing, watch T.V., listen to music, or play on mats, at their choosing. When circumstances permit, the residential staff interacts with the children in the free-time area.

When teaching classroom behaviors to multihandicapped children, a teacher must use verbal prompting, manual prompting, and modeling. After a while, other children in the classroom serve as models.

Our experience in the classroom has shown that it is initially quite demanding to teach the classroom behaviors because a large number of simultaneous decisions are necessary. However, once the students have initially learned the classroom behaviors, anyone can maintain the class.

The goal of the classroom is to have one teacher working with most of the class doing maintenance tasks while the other teacher is working one-to-one. It has taken three and four weeks respectively to reach this goal in our two classes.

The teachers are able to keep accurate records of many behaviors. Records are kept of the number of tasks completed by each child. Also, every 10 minutes such behaviors as on task or off task, in seat or out-of-seat, crying and aggressing are recorded for each child. The number of times a child goes to the free-time area is recorded. Naturally, when a teacher is working in a one-to-one session, the usual trial-by-trial data are kept.

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THE FUTURE IN THE CLASSROOM

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Teachers at the Richmond State School assume that each child has as much potential as any other child and that failure of a child to progress is the fault of the teachers; maybe we haven't found the most effective reinforcer or we're requiring too much or a behavior that is too complex before reinforcement. The fact that these children are labeled retarded has no meaning to us other than that we must start building behaviors at a lower level than for those children not so labeled. We want to stress the importance of starting at the current level of each individual child (defective sensory modalities included).

We're striving to make each child as productive and independent as time will permit. Not only will this ease the cost to society but will bring more freedom of action for the child. In the classroom we stress behaviors appropriate to prevocational or workshop settings, where the person will be required to possess a range of relatively complex behavioral repertoires. These might include sorting by color, texture, large vs. small, or counting, and then placing the sorted items in appropriate recepticals. Such skills are necessary in sorting transistors, for example. Classroom tasks such as pegs-in-the-board and boxes with different geometric shaped holes into which three dimensional forms are placed provide a first approximation to such sorting repertoires. As each child reliably performs a given task, the requirements are gradually raised. Future requirements for pegs-in-the-board for a deaf child with vision may include replication of a model color pattern and/or slot pattern. Such a skill is useful in assembling circuit boards.

Fine motor coordination, helpful in assembling pens, is increased by gradually reducing the size of the holes and pegs in peg-in-the-board tasks or by using smaller diameter string and beads.

Further examples of future behavior targeted for the classrooms include sustained concentration--being on task for several hours without supervision. An increase in concentration time by a child in the classroom would be reflected in the following five data categories: (1) an increase in percent of in-seat observations, (2) a decrease in the rate of prompting, (3) a decrease in the density of reinforcement, (4) an increase in the daily rate of task completion, and (5) an increase in the complexity of the tasks.

Once the children are under situational control in the classroom, which allows more one-to-one training, other more refined skills may be taught. One important area not yet covered in the classroom is social behavior. Specific programs may be implemented for building social behaviors with adults and peers. Programs are not limited to the classroom environment, but may be run outside or in the free play area while the other teacher or aide has the class on maintenance tasks.

With the appropriate electronic technology to ensure even more reliable and accurate control, the number and range of behaviors taught in the classroom, as well as contracts worked on at the workshop, can help these children lead a more productive and independent life.

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TEACHING ROLES IN THE CLASSROOM
(CLASSROOM B)

James Livermore and Bruce Thompson

There are two roles which a teacher in the Richmond State School classroom can assume. The first is the "maintainer," and the second is the "trainer." These roles are assumed by both teachers at different times during the day to reduce fatigue and accentuate the learning rate of the students.

The teacher who is the maintainer works with the majority of the students in the classroom to keep them involved in maintenance tasks. Maintenance tasks are using skills which the students has previously acquired in a repetitive practice session. The maintainer also provides new tasks to the students which may be only slightly more difficult and prompts the student through the tasks initially. The behavior problems which arise in working with these children are handled by the maintainer, who uses a consistent and positive approach which usually involves an increase in the intensity of task-related behaviors with a great increase in the rate of positive reinforcement for those behaviors. The maintainer is primarily responsible for collecting the data on completion of tasks and other behavior in the classroom.

Initially both teachers in the classroom functioned as maintainers. It was a great accomplishment in the beginning just to have all the students remain at their desks for a short period of time. After four weeks of training in in-seat, on-task, and hand raise to signal completion of task behaviors, the second teaching role was introduced to the classroom.

The trainer works in one-to-one sessions with each student in the classroom. Each session is directed at the specific needs of the individual student. The level of skill evidenced by our students covers a wide range and has great variability from student to student. Sessions include training in such skills as manual communication, basic arithmetic (rate counting), sustained concentration, dressing skills, toileting skills, and classroom behaviors.

Our Token System (Classroom B)

We chose a token system for our classroom which would serve two basic purposes. The first was to provide the student with some type of reward for task completion. Each presentation of a token was initially paired with a basic reinforcer such as food or drink to give the token presentation sequence some value to the student. After the tokens had been paired with these primary reinforcers many times and had been used to gain access to the free time area, we began to stretch the schedule of primary reinforcement. Tokens are still presented for each task completion.

The second purpose of the token system is to provide a simple means of collecting data on task completion. We chose to use large metal washers for tokens because of their abundance and low cost and because they are easily manipulated by the students. We regulate the number of tokens needed to gain access to the free time area by placing different pegs in holes drilled in the upper right hand corner of each child's desk. When the child has received enough washers to fill his peg to the top he trades the tokens in for free time. The trainer does not have to count the tokens because each peg is cut and color coded for a particular number of tokens. Our pegs range in length from five to 15 tokens. The length of the peg is selected on the basis of the task and on the child's current ability to stay on task.

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WORKING WITH THE MULTIHANDICAPPED

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The fact that an individual is multihandicapped does not mean that his development is arrested, only that it proceeds more slowly. How slow or fast a handicapped person learns depends on his environment and the persons who are responsible for it. Each of our children are capable of learning. It is our responsibility to provide the proper environment.

There are 10 children in our classroom. Their handicaps include moderate and severe hearing loss, severe loss of sight, total blindness, muscular disorders, and behavioral handicaps such as self-injurious and self-stimulatory behaviors.

The lowest level behavior required of a child in our classroom is in seat behavior. One particular child in our classroom came into the classroom with a base rate in seat behavior of 50%. In the four weeks our class has been in session her rate has risen to 93%. This child also learned to complete other simple tasks during this period. Some of our children can complete as many as seven tasks, which include putting shapes in a shape box and working puzzles and pegboards. These maintenance tasks approximate those skills necessary in a workshop setting.

We use an operant conditioning model in our classroom as a tool to enable us to work effectively with a child in any setting. It emphasizes the positive and the data enables us to record exactly what each child can do and how well he can do it.

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PIAGETIAN THEORY: IMPLICATIONS FOR REMEDIATION FOR THE DEAF-BLIND MULTIHANDICAPPED

Richard E. Smith

Educators have become increasingly aware of the advantages of assuming a position of flexibility in the delivery of services to exceptional children, particularly the multihandicapped. For this reason, there is now more opportunity to provide the types of educational experiences which address the specific developmental and academic needs of the individual learner. In order to effectively develop a specific set of educational goals and objectives for a multihandicapped child, educators must be willing to accept some type of comprehensive assessment-treatment approach. There are obvious disadvantages to adopting any one particular assessment-treatment model, and probably one of the most prominent disadvantages is the limited number of program options or alternatives available to the educator. Whatever assessment-treatment approach educators choose, their common goal should be to facilitate the overall development of the multihandicapped child, so as to enhance his/her general learning capacity. This will assist children to learn compensatory ways of dealing appropriately with their daily social and physical experiences.

Training programs for the severely or profoundly handicapped typically provide a wide array of services which attempt to meet the physical, emotional, social, psychological, and medical needs of each child. Most programs direct their efforts in such areas as gross and fine motor development, occupational/vocational training, language development, self-help skills, emotional and social development, and development of cognitive abilities. If any program is to be successful, information must first be obtained regarding the child's present level of functioning.

Developmental Orientation

The theoretical framework of intellectual and cognitive development posited by Jean Piaget seems to offer yet another body of information to assist the educator in the formulation of appropriate instructional activities for the multihandicapped. The assessment model developed by Piaget focuses on defining, identifying, and analyzing the unique aspects of child development relating to intelligence, acquisition of cognitive skills, and the processes of reasoning. The child, as viewed by Piaget, passes through a series of qualitatively different stages of development which represent different organizations of his intelligence. These stages are sequential and hierarchical in nature, and each proceeding stage serves as the basis for development within the next. In other words, development of certain cognitive structures are the necessary prerequisite for development of more complex abilities at a higher level of thought.

Piaget has identified and described four stages of intellectual and cognitive development: the sensorimotor, preoperational, concrete operational, and the formal operational. In terms of their general cognitive abilities, the severely and profoundly handicapped generally do not develop much beyond the sensorimotor stage. Of course, ultimate acquisition of specific cognitive skills is functionally related to the degree of disability evidenced. However, a discussion of the sensorimotor period of development will promote an understanding of the significance and importance of this period of growth.

During the sensorimotor stage (covering an approximate period of birth to two years of age in normals) the child is characteristically beginning to explore his environment. The child's knowledge of the world around him is primarily derived from his perceptions of objects and events through the senses of hearing, vision, smell, touch, taste, and proprioceptive feedback. Piaget proposes that the child's thought processes develop out of the action upon these objects and events and that knowledge is discovered, rediscovered, constructed, and reconstructed through activities the child engages in. As knowledge is acquired it becomes integrated into the child's present mental structures, thereby increasing the multiplicity and complexity of the thought processes. Piaget describes the development of the child within the sensorimotor period in terms of behavioral events which occur in six substages. Development progresses from the emission of simple reflexive behaviors (such as crying, grasping, and sucking) to being able to coordinate simple motor actions with incoming perceptions which lead to inventing new means of relating experiences through mental combinations.

One of the principal threads of Piaget's theory is the notion of equilibration, which is defined as the subtle interaction of the assimilation and accommodation processes. The child's ability to take in information and incorporate it into his present cognitive structures (termed assimilation) is central to the development of appropriate operational mechanisms or behaviors which assist him in adapting to environmental demands (termed accommodation). The balance or equilibrium between these processes is critically important in the development of unified mental structures. In behavioral terms, adaptation is viewed then as equilibration between the assimilation and accomodation processes. The development of intelligence relies heavily on these processes, as well as the child's ability to interact with his environment. Should a child demonstrate a deficit in any one or in a combination of the sensory areas during early infancy, he will lack opportunity for normal cognitive development. Concomitant with perceptual-physical problems, psychological problems and lack of appropriate social stimulation can also complicate normal growth and development expectancies. Obviously the deaf-blind, multihandicapped youngster can evidence handicapping conditions which range from mild hearing/vision loss, or profound deaf/blindness, to severe or profound mentally retarded deaf-blindness. For these children early treatment intervention is critical, particularly since the deficits evidenced can have a cumulative effect on their rate of development. The earlier the intervention, the greater the probability of, and opportunity for, development.

Assessment/Remediation

The integration of Piagetian-based assessment with other assessment techniques permits educators of the severely and profoundly handicapped to formulate systematic remediation programs which match the task with the child's cognitive abilities.

In the determination of a specific child's cognitive abilities, educators have available to them several assessment approaches. If a multihandicapped youngster's behavior suggests functioning characteristic of children in the sensorimotor stage of development, then the Uzgiris-Hunt (1966) Ordinal Scales of Psychological Development may be of use. This measure was developed from Piaget's descriptions of child development and consists of six series or scales. These scales are devised to assess the areas of object construction and permanence, development of means for obtaining desired environmental events, vocal and gestural imitation, operational causality, construction of object relations in space, and schemes for relating to objects. In each of these scales a series of behavior actions or reactions have been identified by Uzgiris and Hunt as "critical action indicators" of attainment of the sequential steps in the child's development.

For children evidencing higher order skills that are typically indicative of functioning at the preoperational or concrete operational level, the assessment tasks developed by Piaget and Inhelder are useful. These assessment tasks, which assess cognitive ability in such areas as relational terminology usage, conservation, classification, spacial-temporal relations, and mental imagery, can be adopted for the severely or profoundly handicapped. As an example, Piagetian assessment tasks and attendant remediation activities have been developed and adapted for the congenitally blind by Beth Stephens at Temple University. The tasks and activities developed as a result of this BEH project, entitled Cognitive Remediation for the Congenitally Blind, outline specific methods, techniques, and materials required for effective remediation of a variety of cognitive skills. The techniques employed assist the child in developing: (1) appropriate and compensatory ways of dealing with daily experiences, and (2) strategies for the internalization of experience and higher order thinking skills.

Another set of activities developed for the deaf are set forth in the book Games Without Words (Wolff & Wolff, 1974). The activities described in this publication were developed largely from the work at the West Virginia School for the Deaf under the direction of Hans Furth, and provide the child experiences in such areas as classification, probability, memory, symbolic logic, creative thinking, and perspective. However, the thinking games and activities described are most successful and appropriate for use with children demonstrating preoperational and concrete operational functioning. Also, an important and comprehensive review of programs for the retarded (Stephens, in press) details techniques of assessment and programming in the areas of (1) motor functioning, (2) cognitive and social development, (3) language development, (4) self-help skills, (5) recreation, and (6) parent training and counseling.

Summary and Conclusions

As a theory of mental development, Piaget's work offers educators of the multihandicapped an opportunity to understand the "why" of unsuccessful activity and to probe the underlying reasoning processes implied through demonstrated action. Once an analysis of the child's cognitive abilities is made, provision can then be made to design an individual program that provides the child with a variety of developmentally appropriate experiences which foster cognitive development. Educators must avoid the pitfall of assuming that they can make the child develop specific cognitive skills. At best, they can only hope that the structured experiences provided will increase the probability of the handicapped youngster's interaction with tasks presented.

To ensure the successful development of a comprehensive and effective remedial program for the multihandicapped, the following recommendations are offered:

1. Educators must be willing to go back to the child's level of cognitive ability, regardless of where it may be in any of the developmental domains. The strategies employed in remediation must be responsive to the child's predominant mode of processing information and the use of verbal techniques must be withheld until the child has attained a level that enables him to respond to that approach.

2. Units of learning have to be planned so that small increments are provided sequentially to ensure that concepts build upon other concepts. Redundancy and over-learning of basic skills should be provided in order to facilitate the integration of a variety of skills into generalizable behavior patterns.

3. Plans should be made to develop higher order thinking skills (such as conservation, classification, spatial-temporal relations, and logico-mathematic reasoning) through systematic procedures built upon sensorimotor functioning and receptive and expressive language skills which presuppose development of these advanced skills.

4. Within the structured remediation program, freedom of choice and flexibility should be provided to promote independence and autonomy of the handicapped child. The program's direction should be toward self-paced, self-initiated learning.

5. There is a need for the educator to avoid being the object of the child's learning and assume the more appropriate role of a model for learning, which the child can imitate.

6. Even though developmental theory provides a framework for understanding the cognitive skills of the learner, there is great need to identify practical and effective ways to translate this information into a workable classroom program. Integration with other remediation techniques is imperative if there is to be efficient delivery of services. For example, the technology of behavior modification repeatedly has been shown in the research as a successful means to assist the multihandicapped child attain the appropriate behaviors necessary for daily living.

7. Provisions have to be made for continuous evaluation of program effectiveness if the educator is to be responsive to the needs of the child and provide the type of experiences that are interesting and challenging. Content and process task analysis procedures will assist the educator in the formulation of educational strategies in terms of measurable objectives.

These recommendations are only a few of the numerous other ones which could be mentioned, but they should focus attention on the general program needs of the severely and profoundly handicapped child.

As a final note, it is to our advantage, and it is indeed our responsibility as educators, professionals, and providers of services for the multihandicapped to strive to identify from among the variety of assessment-treatment approaches available those which help us best serve the individual child.

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THE BEHAVIORAL CHARACTERISTICS PROGRESSION SYSTEM AS AN ASSESSMENT PROGRAMMING TOOL FOR THE MULTIHANDICAPPED

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The Behavioral Characteristics Progression (BCP) is a management system developed in Santa Cruz, California, as an EHA Title VI-B and ESEA Title III project. The project's original intent was to produce a guide to assist special education administrators in making fiscal and budgetary decisions regarding their various special programs. It was realized early that unless the specific behavioral characteristics of the students in the program were considered, as well as the type of program and the number of pupils, funding would remain somewhat arbitrary. It was felt that any decisions an administrator made regarding funds for a program should be based directly upon the needs of the students in that program. This system, which relates student needs to funding standards, was developed.

The BCP serves as a major assessment, instructional, and communication tool. As an assessment tool, the BCP provides the teacher and/or diagnostician with a comprehensive chart of pupil behaviors to assist in identifying which behavioral characteristics a pupil displays and which he does not. As an instructional tool, the BCP aids the teacher in developing individualized and appropriate learner objectives for each pupil. As a communication tool, the BCP offers a historical recording device which can be used throughout the schooling of the student to display his progress and to help communicate this information to all those involved in the student's educational program. The BCP charts provide a visual display of the pupil's total performance.

The Behavioral Characteristics Progression is a nonstandardized, criterion-referenced tool and continuum of behaviors in chart form. It contains 2400+ observable traits referred to as behavioral characteristics. Ages and labels have been discarded and behavioral characteristics have been grouped into categories of behavior called behavioral strands. The characteristics begin at 1.0 with the most primary behavior and progress toward more complex behaviors which approximate what society considers "appropriate" or "acceptable" adult behaviors. The columns are numbered across the top of the BCP chart but may not reflect exact developmental sequencing or spacing. The BCP is in a progression form to facilitate teacher selection of behavioral objectives.

There are no labels (TMR, EMR, EH) or ages on the BCP. The BCP was designed to assess mentally, behaviorally, and physically exceptional pupils at all levels. It is applicable to retarded pupils from the profoundly retarded to the mildly retarded, to educationally handicapped pupils from the seriously emotionally disturbed to the EH pupil who spends only part of his day in a special class and to physically handicapped pupils with a wide range of handicapping conditions.

The BCP is method free; it does not indicate how to proceed from one objective to another; it does allow for varying instructional techniques. The BCP does not dictate the characteristic sequence for training; it does, however, suggest a logical progression within an area (eg., Reasoning) of the simplest response to the most complex.

The BCP was field tested over a period of approximately three years. Revisions were based from the field, research, observations, and consultations. The BCP was field tested with approximately 1,700 students before the final revision of the charts. Most pupils in public, private, and state hospital schools can be assessed on the BCP. It has been successfully used to assess pupils in state schools, self-contained classes, in learning disability groupings, and in modularly scheduled classes.

The BCP has been functional at Richmond State School for two years. We began assessment in April 1974, and completed the campus population (approximately 1,100 clients) in December of 1974. A standardized testing procedure was developed at Austin State School and is urged by all state school facilities. We are now revising and evaluating these testing procedures, as many do not require a maximum student response. Test kits for each of the strands have also been developed to expedite testing.

The BCP has become the major assessment and instructional tool in the education department at Richmond. Other narrative tests are administered and the results incorporated in the BCP. Developmental inventories and checklists are used as support and as references as individual instructional programs are developed. Classroom organization, individual client training needs, client progress, and training accountability generate from the BCP. A manual of training sequences (instructional methods) correlated to the strands of the characteristics has evolved. Logical groupings and sequencing of characteristics through the training sequences is providing a comprehensive individualized program for each client. The BCP and training sequences have provided opportunities for accountability that can be documented through individual client data that are criterion referenced.

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TRAINING SEQUENCE--A DATA BASED TRAINING MODEL FOR THE MULTIHANDICAPPED

Janis Manuel

Training sequences were developed and used by the Education Department at the Richmond State School when it was discovered that it was not possible to measure the minute progress some students were making with the charts of the Behavioral Characteristic Progression (BCP). Even if the progress could be charted, there was no accurate account of the cues, materials, and/or criteria each teacher had used in the training. These concerns along with the growing need for accountability, led to the development of the training sequence.

The following definition will aid in the clarification of these programs referred to as training sequences. A training sequence is "an objective description of the behaviors to be taught, procedures and materials to be used, data to be taken, and requirements to be met, including justification for this instruction, accompanied by referencing to the BCP." This referencing to the BCP is one of the most distinctive differences between the training sequences written by the education staff at Richmond State School and those written by other programs.

Examination of the guide used to write each training sequence will clarify even further the type of programming the training sequence refers to.

General Instructional Objective

The general instructional objective is determined by developmental inventories, BCP charts, and/or classroom observation. It is written in terms of a BCP characteristic or a group of characteristics pertaining to one skill. The wording of the BCP is not altered for the objective. If it is felt that the characteristic needs further clarification, these additions will be enclosed in parenthesis after the word or phrases it clarifies.

BCP Characteristics

All BCP characteristics that pertain to the general instructional objective are indicated by their respective strand and characteristic numbers. This could be a logical grouping located in one strand, or the characteristics could be scattered throughout the BCP.

Program Writer

The name of the person who initiates the program and the name or names of any person who contributes 50% or more to the writing of the training sequence.

Terminal Behavior

This is the behavior, described in observable measureable terms, that is required at the end of the program. For example, in the "socks on" training sequence, the terminal behavior states "the S will independently put stretch socks (size to fit S) on both feet upon command, Sock On. The percent correct and the number of trials and sessions this accuracy must be maintained for completion, 90% for 30 trials, 3 sessions, 10 trials per session," is also included. A reinforcement schedule is suggested, but specific reinforcers and schedules are indicated on the individual data sheets, since training sequences are written for the general population of students.

Purpose of the Program

This section pertains to the benefit of the training sequence to the student. It includes long- and short-term goals and future instructional goals the training will lead to. A training sequence might benefit the student by being a precursor to reading, or as in the self-care training sequences, by making the student more independent (dressing/undressing) or more socially acceptable (grooming/feeding).

Pre-Entry Skills

Any applicable physical abilities, such as sight, hearing, and mobility, and behaviors or skills the student has shown before beginning the program are included. Also cited are developmental steps that are pertinent to the student's success. If the pre-entry skills can be located on the BCP, they are written with their respective strand and characteristic numbers. Other training sequences may also appear as prerequisites to a particular program.

Baseline Data and Procedures

Baseline is taken before training to determine the level of intervention for instruction. It involves presenting a task and/or materials and observing and recording the accuracy and/or frequency of the student's response. Baseline includes the minimum number of sessions for baseline to be taken and a procedure for observing the behavior--observing and recording a chain of approximations, or the number of trials per step of the intervention procedure. It describes the procedures for baseline--baseline and intervention each phase, baselining all phases before intervention, or observation of a chain. The setting and method of materials presentation, cues, modeling, or instructions are indicated. Also included are the response definitions and their symbols--correct response (+), incorrect response (-), and no response (0).

Setting and Procedures for Intervention

A description of the setting and the response definitions for intervention or a statement indicating if they are the same as in baseline is written. The number of trials per session or the session duration and the presentation or positioning of materials are specified. Prompts are defined, along with procedures for their use and fading. Criteria for progression and completion of the program is indicated, and procedures for generalization probes of the response are described.

Materials and Apparatus

This involves any devices, materials, or equipment necessary for the training sequence.

Intervention

The intervention procedures are written as successive approximations (indicated as phases and steps) to the terminal behavior and it is written in minute increments to minimize any opportunity for error on the student's part. Each step includes one response from the student to make correlation of the data sheets and the intervention more systematic. The language is minimal and consistent to avoid misinterpretation among the trainers and so as not to confuse the student. The final phase/step of intervention will be the terminal behavior of the general instructional objective. Probes to determine generalization to other settings, materials, and trainers are also included.

Correctional Procedures

Alternate intervention steps to correct an incorrect or no response are written to correspond numerically to the intervention step it corrects. Individual data sheets indicate when correctional procedures are used.

Reinforcement

A particular reinforcement schedule that is necessary for a program's completion and the procedure to eliminate or minimize primary reinforcement may be suggested. However, specific reinforcers and schedules are indicated on each student's data sheet.

When possible, training sequences are pretested before an initial draft is submitted. Admissions, deletions, and various changes may be needed after implementation. These will be written on the training sequence draft and submitted when the sequence is completed to the trainer's satisfaction. At this time the education staff at Richmond State School is evaluating and revising approximately 200 training sequences that have been written and used to train skills in the BCP strands of dressing, undressing, eating, drinking, grooming, social eating, gross motor, visual motor, sensory perception, oral hygiene, reading, math, practical math, reasoning, language, writing, art, homemaking, and kitchen skills.

RICHMOND STATE SCHOOL
DEPARTMENT OF EDUCATION AND TRAINING
TRAINING SEQUENCE

General Instructional Objective:

Match (visually) circle, square, triangle, and diamond.

BCP: 14-48.0

Program Writer: Florence Ellison and Julie Lamphere

Terminal Behavior:

S (independently, upon model by E or verbal cue "Name of S, match") will place 48 sample objects (8 each of 6 shapes of various colors, sizes, and textures as noted in phase X), on top of (such as 2/3 overlap) the matching stimuli at 90% accuracy of 30 trials, 3 consecutive sessions, 10 trials per session. (Each trial is matching all 40 samples). S will complete the trial in 10 minutes. Reinforcement will be intermittent schedule (edible and/or social); the intermittent schedule will be a VR schedule (the mean value of the VR schedule will be determined by E for each individual S).

Purpose of Activity:

To teach S to discriminate shapes as a basic prerequisite skill necessary for more complex visual discrimination, sequencing, and memory skills; prerequisite math and reading skills; preworkshop skills.

Pre-Entry Skills:

1. S must have sight.
2. S must be able to sit in readiness position (hands in lap or down on table) and maintain eye contact with E for 2 seconds.
3. S must fixate eyes on object 14-02.0, 14-12.0.
4. S must release or drop object from grasp 14-23.0.
5. S must have mobility of one hand 14-22.0.
6. S must reach across midline and grasp objects 14-36.0.
7. S must place round object in round hole 14-38.0.
8. S must have previously qualified on the BCP 1 or completed training sequences 14-44.0, 14-45.0, 14-46.0, 14-47.0, 14-49.0.

Baseline Data and Procedures:

Baseline data will be collected in a minimum of four sessions, one trial per response step of intervention or until data stabilizes. All phases will be baselined before intervention or baseline one phase-intervention the baseline-intervention each following phase (at E's discretion). S will be seated in a chair at table with E directly in front, facing S. The materials will be placed in front of S on the table according to phase 1 step being baselined. E will give verbal command "Name of S, match." Modeling and verbal command are the discriminative stimulus (S^D) used to initiate trials as described in steps of intervention and are not recorded as a prompt. A correct response (+) will consist of S placing sample objects on top of matching stimuli (such as 2/3 overlap) as described in intervention. An incorrect response (-) will consist of S inappropriately placing samples. A no response (0) will consist of S not initiating task or a no task related response. No reinforcement will be given during baseline.

Setting and Procedure for Intervention:

The program will be conducted in E's classroom. The setting will be the same as described in baseline. The sample objects will be placed to the left of S, and the matching stimuli will be placed directly in front of S. Each session will consist of 10 trials. The definition of shape pertaining to this training sequence is "a definite form having three dimensions length, size, and width, which will vary, thickness not to exceed 1/2 inch." The shapes will be introduced in the following order: circle, square, triangle, and diamond. Correct, incorrect, and no response definitions and symbols will be the same as described in baseline. After each trial all materials will be removed. A trial is defined as matching the designated number of samples at each step. A total prompt (T) will consist of E manually taking S's hand to pick up and/or place the sample on the correct matching stimuli. Partial prompt (P) will be in the form of a point by E to correct or a response (matching stimuli) touch cue to S to initiate the response. All prompts will be faded before criteria at step is met. Modeling or verbal command are the discriminative stimuli (S^D) to initiate a trial as described in the steps of intervention and are not recorded as a prompt. The verbal command is not imperative to meeting criteria. Criteria for progression from one phase/step to the next will consist of S placing sample objects on top of matching stimuli (such as 2/3 overlap) 90% of 30 trials in three consecutive sessions, 10 trials per session.

Materials and Apparatus:

All sizes are approximate. The exact dimensions may not be available. Posterboard: 6 each (blue, red, yellow, green)

1/2" diameter circle
1-1/2" diameter circle
2" diameter circle
2-1/2" diameter circle
3" diameter circle
3-1/2" diameter circle

1" X 1" X 1" triangle
2" X 2" x 1" triangle
2-1/2" X 2-1/2" X 2-1/2" triangle
3" X 3" X 2" triangle
3" X 3" X 3" triangle

1" X 1" square
1-1/2" X 1-1/2" square
2" X 2" square
2-1/2" X 2-1/2" square
3" X 3" square
3-1/2" X 3-1/2" square

1" X 1" X 1" X 1" diamond
2" X 2" X 2" X 2" diamond
2-1/2" X 2-1/2" X 2-1/2" X 2-1/2" diamond
3" X 3" X 3" X 3" diamond
3-1/2" X 3-1/2" X 3-1/2" X 3-1/2" diamond

Rubber: Repeat colors and sizes of posterboard.
Cloth/Felt: Repeat colors and sizes of posterboard.
Wooden/Plastic: Repeat colors and sizes of posterboard.
Posterboard: blue, red, yellow, and green

Heart	Star	Rectangle
	2" and 3"	1" X 3"

Instructo primary cut-outs (felt). Shapes also made of other textures. Milton Bradley holiday felt cut-outs; shapes also made of other textures.

Intervention:

Phase I Circle

Step 1: E places a 3-1/2" blue matching stimuli posterboard circle matching stimuli on the table in front of S and a 3-1/2" blue sample circle to S's left of E (models response) matching circle to circle (moving sample circle on top matching stimuli circle) saying "match." Returning circles to original position, E places a 3-1/2" circle (blue) in front of S and a 3-1/2" blue circle to the left of S on the table. E gives verbal command "Name S, match." S matches one sample circle to corresponding matching stimuli circle. E randomizes placement of matching stimuli on the table each trial. Criterion is met when S independently moves circle to circle without E's modeling.

Step 2: E randomly places each trial a 3-1/2" blue posterboard circle and a 3-1/2" X 3-1/2" X 2-1/2" (green) triangle on table directly in front of S. (Triangle used as distractor). E places one blue sample circle to the left of S. E commands "Name S, match." S matches one blue sample circle to corresponding matching stimuli circle in the presence of one distractor.

Step 3: Repeat step 2 using two distractors (3-1/2" X 3-1/2" X 2-1/2" green triangle and 3-1/2" X 3-1/2" green square) randomly placing materials on table each trial.

Step 4: E randomly places each trial (1 each posterboard) 3-1/2" blue circle, 3-1/2" X 3-1/2" X 2-1/2" green triangle, 3-1/2" X 3-1/2" red square, and 3" X 3" X 3" X 3" yellow diamond on table directly in front of S (triangle, square, diamond, as distractors). E places two, 3-1/2" blue sample circles to the left of S. E commands "Name S, match." S matches two blue sample circles to corresponding matching stimuli circle in the presence of three distractors.

Step 5: Repeat step 4, matching four sample circles to corresponding matching stimuli circle in the presence of three distractors.

Step 6: E randomly places each trial (one each posterboard) 3-1/2" blue circle, 3-1/2" X 3-1/2" X 2-1/2" blue triangle, 3-1/2" X 3-1/2" blue square and 3-1/2" side blue diamond on table directly in front of S (triangle, square, and diamond, as distractors). E places three 3-1/2" and three 2" blue sample circles to the left of S. E commands "Name S, match." S matches six blue sample circles to corresponding matching stimuli circle in the presence of three distractors.

Step 7: E, each trial, randomizes placement and the size and color of one posterboard matching stimuli (circle) and distractors (triangle, square, and diamond) (for size and color see materials and apparatus) on table in front of S. E randomly stacks 6 (1 each size, see materials and apparatus and of colors blue, green, red, and yellow) circles to the left of S. E commands, "Name S, match." S matches six sample circles to matching stimuli circle in the presence of three distractors.

Step 8: Repeat step 7 also randomizing texture of the six samples and the one matching stimuli (posterboard, rubber, cloth/felt, wooden/plastic).

Phase II Square

Step 1: E randomly places each trial a 3-1/2" X 3-1/2" blue matching stimuli posterboard square on table directly in front of S and a 3-1/2" X 3-1/2" sample circle, to S's left of matching stimuli. E models response (moving sample square on top of matching stimuli square) saying "match." E returns squares to original position and gives verbal command "Name S, match." S matches sample square to matching stimuli square.

Step 2: E randomly places each trial (one each posterboard) 3" X 3" blue square and 3" X 3" X 2" green triangle on table directly in front of S (triangle as distractor). E places one blue 3" X 3" sample square to the left of S. E commands "Name S, match." S matches sample square to matching stimuli square in the presence of one distractor.

Step 3: Repeat step 2 using 2 sample circles and 2 distractors (any size; see materials and apparatus--green triangle and green diamond) randomly placing materials.

Step 4: E ramdomly places each trial (1 each posterboard 2" X 2" blue square, 2" X 2" X 2" blue triangle, 2" X 2" X 2" X 2" blue diamond, and 3" X 2" blue rectangle on table directly in front of S (triangle, diamond, and rectangle as distractors). E places three 2" X 2" and three 1-1/2" X 1-1/2" blue sample squares to the left of S. E gives command "Name S, match." S matches six sample squares to matching stimuli square in the presence of three distractors.

Step 5: E randomizes placement and the size and color of one posterboard matching stimuli (square) and distractors (triangle, diamond, and rectangle) (for size and color see materials and apparatus) on table in front of S. E randomly stacks six sample (1 each size: see materials and apparatus and of colors blue, green, red, and yellow) squares to the left of S. E commands "Name S, match." S matches six sample squares to matching stimuli square in the presence of three distractors.

Step 6: Repeat step 5, also randomizing texture of six samples and one matching stimuli (posterboard, rubber, cloth/felt, wooden/ plastic).

Phase III Circle and Square

Step 1: E randomly places each trial (one each posterboard) 3" green circle and a blue 3" X 3" square on the table directly in front of S. E randomly stacks one 3" green circle and one 3" X 3" blue square on the table to the left of S. E gives command "Name S, match." S matches one circle to circle and one square to square.

Step 2: E randomly places each trial (one each posterboard) 2" green circle, one green 2" X 2" square and a 3" X 3" green triangle on table directly in front of S (triangle as distractor). E randomly stacks two each - 2" green sample circles and 2" X 2" green squares to the left of S. E commands "Name S, match." S matches the samples two green circles and two green squares to matching stimuli circle and square in the presence of one distractor.

Step 3: Repeat step 2, using three each samples of circle and square and three distractors (3" X 3" green triangle, 1" X 1" green diamond 2" X 3" green rectangle).

Step 4: E randomly places each trial (one each posterboard) 1-1/2" blue circle, blue 1-1/2" X 1-1/2" square, blue 2" X 2" X 1" triangle, blue 1-1/2" sided diamond, and blue 3" X 2" rectangle on table directly in front of S (triangle, diamond, and rectangle as distractors). E randomly stacks samples of two 2-1/2" and two 3" blue circles, two 1" X 1" and two 2-1/2" X 2-1/2" blue squares to the left of S. E gives verbal command "Name S, match." S matches four circle samples and four square samples to matching stimuli circle and square in the presence of three distractors.

Step 5: E randomizes each trial the placement and the size and color of one each posterboard matching stimuli (circle and square) and distractors (triangle, diamond, and rectangle) (for size and color see materials and apparatus) on table in front of S. E randomly stacks six samples each shape of (one each size; see materials and apparatus and of colors blue, green, red, and yellow) circles and squares to the left of S. E commands "Name S, match." S matches 12 samples squares and circles to matching stimuli square and circle in the presence of three distractors.

Step 6: Repeat step 5 also randomizing the texture of six samples circles and six samples squares and one each matching stimuli--circle and square (posterboard, rubber, cloth/felt, wooden/plastic).

Phase IV Triangle

Step 1: E places a 2" X 2" X 1" blue matching stimuli posterboard triangle on table in front of S. E places one 3" X 3" X 2" blue posterboard triangle to the left of S. E gives verbal command, "Name S, match." S matches one blue sample triangle to matching stimuli triangle.

Step 2: E randomly places each trial (one each posterboard) 2" X 2" X 1" red triangle and one 3" X 2" green rectangle on table in front of S (rectangle as distractor). E places one 1" X 1" X 1" blue sample triangle to S's left. E commands "Name S, match." S matches one blue sample triangle to matching stimuli triangle in the presence of one distractor.

Step 3: Repeat step 2 using two sample triangles and two distractors (any size see materials and apparatus) green rectangle and green heart as distractors.

Step 4: E randomly places each trial (one each posterboard) 1" X 1" X 1" green triangle, 2" X 1" green rectangle, 2" green heart, 2" green star on table in front of S (rectangle, heart, and star as distractors). E randomly stacks three 1" X 1" X 1" and three 2" X 2" X 2" green sample triangles to S's left. E commands "Name S, match." S matches six sample triangles to matching stimuli triangles in the presence of three distractors.

Step 5: E randomizes each trial the placement and the size and color of one posterboard matching stimuli (triangle) and distractors (rectangle, heart, star) (for size and color see materials and apparatus) on table in front of S. E randomly stacks six sample (one each size, see materials and apparatus and of colors blue, green, red, and yellow) triangles to the left of S. E commands "Name S, match." S matches six sample triangles to matching stimuli triangle in the presence of three distractors.

Step 6: Repeat step 5 also randomizing texture of six samples and one matching stimuli (posterboard, rubber, cloth/felt, wooden/plastic).

Phase V Circle, Square, Triangle

Step 1: E randomly places each trial (one each posterboard) 3" red circle, one yellow 3" X 3" square, one blue 3" X 3" X 3" triangle on table directly in front of S. E randomly stacks (one each) 3" red circle, 3" X 3" yellow square, 3" X 3" X 3" blue triangle to the left of S. E commands "Name S, match." S matches one red sample circle, one yellow sample square, and one blue sample triangle to corresponding matching stimuli shapes.

Step 2: E randomly places each trial (one each posterboard) 2" red circle, 2" X 2" red square, 2" X 2" X 1" red triangle, and 3" red heart on table directly in front of S (heart as distractor). E randomly stacks samples of two each posterboard, 2" red circles, 2" X 2" red squares and 2" X 2" X 2" red triangles to S's left. E commands "Name S, match." S matches (two samples each) red circles, red squares, and red triangles to the corresponding matching stimuli shapes in the presence of one distractor.

Step 3: Repeat step 2 using 3 each samples of circle, square, and triangle, and three distractors (2" red heart, 2" red star, and 3" X 2" red rectangle).

Step 4: E randomly places each trial (one each posterboard) 3" yellow circle, 2" X 2" yellow square, 2" X 2" X 1" yellow triangle, 3" yellow heart, 2" yellow star, and 2" X 1" yellow rectangle on table in front of S (star, heart, and rectangle as distractors). E randomly stacks samples of two 1-1/2" and two 2-1/2" yellow circles, two 1" X 1" and two 3" X 3" yellow squares, and two 1" X 1" X 1" and two 3" X 3" X 2" yellow triangles on S's left. E commands "Name S, match." S matches (four each) sample circles, squares, and triangles to corresponding matching stimuli shapes in the presence of three distractors.

Step 5: E randomizes placement and the size and color of one each posterboard matching stimuli (circle, square, triangle) and distractors (heart, star, rectangle) (for size and color, see materials and apparatus) on table in front of S. E randomly stacks six samples each shape (one each size, see materials and apparatus and of colors blue, green, red, and yellow) circles, squares, and triangles to the left of S. E commands "Name S, match." S matches 18 samples to corresponding matching stimuli shapes in the presence of three distractors.

Step 6: Repeat step 5 also randomizing texture of each shape six samples and one each shape matching stimuli (posterboard, rubber, cloth/felt, wooden/plastic).

Phase VI Diamonds

Step 1: E places a 3" sided yellow matching stimuli posterboard diamond on table in front of S. E places one 3" sided yellow posterboard sample diamond to the left of S. E commands "Name S, match." S matches one sample diamond to matching stimuli diamond.

Step 2: E randomly places each trial matching stimuli (one each posterboard) 2" sided blue diamond and a 1" X 1" X 1" red triangle on table in front of S (triangle as distractor). E places one 3" sided green diamond to the left of S. E commands "Name S, match." S matches one yellow sample diamond to matching stimuli diamond in the presence of one distractor.

Step 3: Repeat step 2 using three sample diamonds and two distractors (any size, see materials and apparatus) red triangle and red rectangle as distractors).

Step 4: E, each trial, randomly places matching stimuli (one each posterboard) 1" sided blue diamond, 1" X 1" X 1" blue triangle, 2" X 1" blue rectangle and 2" blue star (triangle, rectangle, and star as distractors) on the table in front of S. E randomly stacks three 2" sided and three 3" sided blue diamonds to S's left. E commands "Name S, match." S matches six sample diamonds to matching stimuli diamond in the presence of three distractors.

Step 5: E, each trial, randomizes the placement and the size and color of 1 posterboard matching stimuli (diamond) and distractors (triangle, rectangle, star) (for size and color, see materials and apparatus) on table in front of S. E randomly stacks 6 samples (1 each size, see materials and apparatus and of colors blue, green, red, and yellow) diamonds to the left of S. E commands "Name S, match." S matches 6 sample diamonds to matching stimuli diamond in the presence of three distractors.

Step 6: Repeat step 5 also randomizing texture of six samples and one matching stimuli (posterboard, rubber, cloth/felt, wooden/plastic).

Phase VII Circle, Square, Triangle, Diamond

Step 1: E randomly places each trial matching stimuli (one each posterboard) 3" red circle, 3" X 3" blue square, 3" X 3" X 3" yellow triangle and 3" sided green diamond on table in front of S. E randomly stacks (one each posterboard) 3" red circle, 3" X 3" blue square, 3" X 3" X 3" yellow triangle, and 3" sided green diamond samples to S's left. E commands "Name S, match." S matches one red circle, one blue square, one yellow triangle, and one green diamond samples to corresponding matching stimuli shapes.

Step 2: E randomly places each trial matching stimuli (one each posterboard) 2" blue circle, 1" X 1" yellow square, 2" X 2" X 1" green triangle, 1-1/2" sided red diamond and 3" X 2" red rectangle on table in front of S (rectangle as distractor). E randomly stacks samples of (two each posterboard) 2" blue circles, 1" X 1" yellow squares, 2" X 2" X 1" green triangles, and 1-1/2" sided red diamonds to S's left. E commands "Name S, match." S matches samples (circles, squares, triangles, and diamonds) to corresponding matching stimuli shapes in the presence of one distractor.

Step 3: Repeat step 2 using three distractors (5" X 3" yellow rectangle, 5" red heart, 5" blue star as distractors) and three each samples of circle, square, triangle, and diamond.

Step 4: E randomly places each trial matching stimuli (one each posterboard) 2" yellow circle, 1-1/2" X 1-1/2" yellow square, 3" X 3" X 2" yellow triangle, 2" sided yellow diamond, 2" yellow star, 3" yellow heart, and 2" X 1" yellow rectangle on table in front of S (star, heart, and rectangle as distractors). E randomly stacks posterboard samples of two 3" and two 1" yellow circles, two 2" and two 3" yellow squares, two 1" X 1" X 1" and two 2" X 2" X 1" yellow triangles, and two 1" sided and two 3" sided yellow diamonds to S's left. E commands "Name S, match." S matches (four each) sample circles, squares, triangles, and diamonds to corresponding matching stimuli shapes in the presence of three distractors.

Step 5: E, each trial, randomizes the placement and the size and color of one each posterboard matching stimuli (circle, square, triangle, diamond) and distractors (star, heart, rectangle) (for size and color, see materials and apparatus) on table in front of S. E randomly stacks six samples each shape (one each size, see materials and apparatus and of colors blue, green, red, and yellow) circles, squares, triangles, and diamonds to the left of S. E commands "Name S, match." S matches 24 samples to corresponding matching stimuli shapes in the presence of three distractors.

Phase VIII Posterboard, Cloth/Felt, Rubber, Wooden/Plastic, Circle, Square, Triangle, and Diamond

Step 1: E randomly places each trial matching stimuli (one each-red-rubber) 3" circle, 3" X 3" square, 3" X 3" X 2" triangle, 2" sided diamond on the table in front of S. E randomly stacks 12 each-red-wooden) samples of 3" circle, 3" X 3" square, 3" X 3" X 2" triangle and 2" sided diamond to the left of S. E commands "Name S, match." S matches rubber samples to corresponding wooden matching stimuli shapes.

Step 2: E randomly places each trial matching stimuli (one each-blue-rubber and/or wooden) 1" circle, 1" X 1" square, 1" X 1" X 1" triangle, 1" sided diamond, and distractors one 2" X 1" rectangle and one 2" star on the table in front of S. E randomly stacks (six each shape-blue-cloth/felt) samples of three 2" and three 3" circles, three 2" X 2" and three 3" X 3" squares, three 2" X 2" X 2" and three 3" X 3" X 3" triangle, and three 1-1/2" sided and three 2" sided diamonds to the left of S. E commands "Name S, match." S matches 24 cloth/felt samples to corresponding wooden and rubber matching stimuli shapes.

Step 3: E randomly places each trial and randomizes size, color, and texture (see materials and apparatus) (textures: posterboard, wooden/plastic, rubber, cloth/felt) of one each matching stimuli (circle, square, triangle, diamond) and three distractors (star, heart, and rectangle; see materials and apparatus for size and color) on the table in front of S. E randomly stacks 10 samples each shape (randomize each shape, size, color, texture) of circles, squares, triangles, and diamonds to the left of S. E commands "Name S, match." S matches 40 samples, each trial, to corresponding matching stimuli shapes in the presence of three distractors.

Phase IX First Generalization Probe: Instructo Primary Cut-Outs and Milton Bradley Holiday Felt Cut-Outs

Step 1: E randomly places, each trial, and randomizes shape, size, color and texture of one each matching stimuli and three distractors on the table in front of S. E randomly stacks eight samples of six shapes (one each randomize shape, size, color, texture) to the left of S. E commands "Name S, match." S matches 48 samples, each trial to corresponding matching stimuli shapes in the presence of three distractors within ten minutes with intermittant reinforcement.

Phase X Second Generalization Probe - Shapes are combination of Previously Introduced Shapes and Shapes Unfamiliar to S.

Step 1: Repeat step 1, Phase IX, presenting shapes unfamiliar to S combined with shapes matched in previous phases.

Correction Procedures: For All Steps and Phases

No response--S does not respond within five seconds or does not give task-related response: E will say "no," repeat command, and totally prompt S through the correct response.

Incorrect response--S responds incorrectly. E will say "no," repeat command, and totally prompt S through the correct response, gradually fading to partial prompts and no prompting when prompts are no longer needed.

Incorrect response--Step may need further breakdown; fading colors more gradually, adding distractors one at a time, varying size and textures more gradually, and adding one at a time.

First and Second Generalization Probe: Baseline materials as outlined for Phases I-VIII; begin intervention at step on which S does not meet 90% accuracy.

Reinforcement

Initially, S may require both primary and conditioned reinforcers. It is recommended by completion of the program, the primary reinforcement be faded out. The rule for fading out primary reinforcers (i.e., stretching the reinforcement schedules) should be stated on the individual data sheets. It is recommended that by completion of the training sequence, the reinforcement occurs on a VR schedule.

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CASE STUDY OF A MULTIHANDICAPPED CHILD IN A COMPLEX MATCHING TASK

Suzan G. Robinson

Maintenance of complex stimulus control across a temporal delay seems to be prerequisite for, or involved in, language skills. The following study describes the use of a complex matching task in an attempt to obtain information on and improve a subject's visual retention ability.

The subject of the study was an 11-year-old male client. He had been diagnosed as legally blind, legally deaf, and profoundly retarded. The subject had been in several special education classrooms before his placement at the Multihandicapped Project. Records indicated that the child was hyperactive, had a short attention span, and had severe agressive tendencies. In addition, attempts to teach sign language to the subject had not met with success. Records of intervention in traditional special education classrooms indicated that stimulus control was established with great difficulty, if at all.

During the course of the child's routine evaluation at the Multihandicapped Project, it was discovered he possessed good color discrimination. He was able to distinguish at least seven different colors. This was determined during the process of administering a matching to sample task. This task involved the subject matching like colored discs.

The results of this test demonstrated that the child had the capacity for at least limited visual perception and retention with this information. It was decided to attempt to develop a program which could draw upon and improve those abilities. The object ultimately was to facilitate the teaching of manual communication to the subject. A program was needed which would allow measurement of the subject's capacity for retention of visual information.

The initial program developed to accomplish this purpose was a simple color discrimination and matching task. The child was asked to match beads of the same color, with increasing numbers of matching and nonmatching beads. Within a surprisingly low number of sessions the subject had progressed to the point where he was able to successfully identify up to 10 matching colored beads. Based upon these results, it was decided to attempt to discern if the subject was also capable of form discrimination as well as color. Form discrimination was even more important because it was essential to, and imperative for, the subject's being able to assimilate manual and/or printed communication forms.

A complex matching task was designed which required the subject to select from a number of objects those which had been presented as the sample display. The objects involved were small plastic, wood, and metal articles, such as cars, trucks, planes, wooden beads, and metal coins. The subject was allowed to view the sample for 5 seconds. The sample object was then covered.

Within one second the comparison display, composed of the sample plus varying numbers of other objects, was presented. The subject then selected the correct object or objects and placed them on top of a small box. A token was presented to the subject for each correct response.

The entire task consisted of six phases, with each phase consisting of four steps. Phase one, step one, consisted of the child's being required to match like object with like object. Step two required the child to match the like objects with one object distractor present in the comparison sample. Step three required the subject to select the like objects with two object distractors present in the comparison sample. Step four involved the selection of the like objects with three object distractors.

Each successive phase of the task involved the same progressive increase in the number of object distractors, with the subject being required to identify and select increasing numbers of like objects. For example, phase two required the subject to correctly identify two like objects from an increasing number of comparison objects. The progression continued until the final step of phase six, where the subject correctly selected six like objects from a comparison sample which included three object distractors.

The subject was required to demonstrate reliable mastery of each step of the task before progressing to the succeeding levels. Sessions were conducted which consisted of 20 trials each. The subject was kept at the appropriate level until he was able to complete three consecutive 20-trial sessions at an accuracy level of at least 95%. When that level of proficiency was achieved, the child would then be elevated to the next step of the task.

As an additional guarantee of the reliability of the subject's performance at each level for the task, the objects involved in the task were changed from each trial to the next. The like objects which the subject was to identify were never constant from one trial to the next, and the object distractors were varied as well.

As reflected by Table 1, the client's progress was reasonably consistent through the various steps. Sessions were conducted on a twice daily basis. The subject completed some of the early steps in the minimum possible time. However, some steps required as many as 27 sessions for completion.

The above-described program is evidence that profoundly retarded clients are capable of mastering a complex task which involves a type of conceptual skill in language preparation. Careful sequencing of the program is necessary to allow full

Table 1

Number of Sessions for Completing Each
Step of the Six Phases

Phase I		Phase II		Phase III		Phase IV		Phase V		Phase VI	
Step	Number	Step	Number	Step	Number	Step	Number	Step	Number	Step	Number
1	4	1	3	1	3	1	3	1	6	1	5
2	4	2	4	2	4	2	8	2	15	2	25
3	3	3	6	3	3	3	8	3	18	3	24
4	5	4	4	4	7	4	11	4	27	4	15

development, and patient, thorough analysis of the program and its results is essential to proper evaluation. Through this program, the client developed visual retention and increased his capacity to attend to and replicate different visual forms. At the present time, the client is able to recognize 26 manual signs and is involved in a training program for the receptive recognition of the printed word.

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A TECHNIQUE FOR TRAINING A GENERALIZED "SAME" CONCEPT

Joe Michael Cox

Description of the Child

A 14-year old, blind (bilateral cataracts and glaucoma in the right eye) profoundly hearing impaired (loss greater than 80 dB in the speech range) girl with an extended etiology, including rubella syndrome with secondary microencephelia, was the S. She had been in various state schools for four years prior to entering the multihandicapped project in October of 1974. Her baselines upon entering the program revealed no self-help skills, no communication skills beyond simple emotional reactions (i.e. crying, laughing, etc.), and no appropriate manipulation of objects (toys or otherwise). Beyond her significant repertoire of self-stimulating behaviors, the S could do little.

She could (and consistently did) orient to a glass presented within three or four feet of her, obtain the glass, and drink from it. When finished with the glass, she would simply release her hold on it. She could also orient to a chair from a distance of about 20 feet, walk to the chair, and curl into a fetal position on it. This was the only evidence she displayed of independent mobility skills. She would occasionally pick up her spoon and drop it during meals, but consistently had to be fed by the residential staff. She was incessantly engaged in one or more of three behaviors: (1) hyperventilation, (2) filtering, and (3) light gazing.

Her training in related skills at the project during the eight months before she began the generalized same discrimination program include sequentially:

1. "Grasping"--A free operant search program in which she was reinforced for touching and picking up novel objects placed in her lap. The child initially showed no interest in novel objects.

2. "Spoon in Tray"--A placement task. The S learned to pick up a spoon on cue and drop it into a shallow tray 12 inches to her left from the spoon's original position.

3. "Bead in Can"--A placement task. The S learned to pick up a bead on cue and drop it into a coffee can 12 inches to her right from the bead's original position.

4. "Two-Part Discrimination"--An interface of the "spoon in tray" and "bean in can" programs. S learned to sort spoons to her left and beads to her right as they were individually presented in front of her, the E randomizing the sequence in which spoons and beads were presented.

5. "Three-Part Discrimination"--The S learned to sort spoons to her left, beads to her right, and cups to front center.

A Generalized "Same" Concept

PROGRAM: Matching Like Objects

SUBJECT: E. Kay Buchtien

PROGRAM WRITER: Joe M. Cox

DATES: June 2, 1975 to November 20, 1975

SESSIONS TO COMPLETION: 371

TERMINAL BEHAVIOR OR GENERAL INSTRUCTIONAL OBJECTIVE

Seated at a training desk and presented with a display of 12 different objects and a novel sample object matching one of the 12, the S will select the match from the display and touch it to the sample to indicate "sameness." Display objects will differ along parameters of weight, size, shape, or texture. The S will perform this task at 90% correct for at least one session on each of three days on a VR-5 schedule of reinforcement.

PURPOSE OF PROGRAM

1. The demonstration of the concepts of object constancy and generalized "sameness" is considered an essential prelanguage skill.

2. The shaping of generalized matching skills is essential to the prevocational education of the retarded.

3. This program describes an efficient, systematic method by which generalized matching skills and the concept of generalized "sameness" may be taught to a deaf-blind client.

MATERIALS AND APPARATUS

1. Shortened Egg Carton Bottom (8 pockets)

2. Complete Egg Carton Bottom (12 pockets) - NOTE: Cartons may be weighted to prevent their sliding on the desk by glueing washers or fishing weights underneath. Also, muffin pans may be substituted for egg cartons.)

3. 1" wooden blocks (9 each)

4. 1" wooden balls (9 each)

5. small plastic beads (11 each)

6. small plastic pegs (10 each)

7. 3" steel nails (9 each)

8. Flat plastic diamond shapes (8 each)

9. Coke bottle tops (7 each) (NOTE: Any items small enough to fit in an egg carton pocket may be substituted for any of items 3 through 9, inclusive for use in phaze V through phaze N.)

10. Stop watch or metronome

11. Data sheet

12. Writing instrument

REINFORCEMENT

Reinforcement will occur on a CRF schedule unless the program provides an alternate schedule. Reinforcers will include but not be limited to:

1. 10-second presentation of flashlight

2. 10-second presentation of vibrator

3. Small sips of "Cal-Rich" drink

4. Small sips of "Cool-Aid"

The E may vary the reinforcer at his option.

PRE-ENTRY SKILLS

The S must have the use of both hands so that he can be guided to pick up small objects from a desk in front of him and touch them together at chest line.

BASELINE DATE AND PROCEDURES

A multiple baseline will be employed. Before initiating training in a phase, the E will obtain a preintervention measure of the S's performance of the response required in the final stage (criterion sessions) of that phase. This measure will include the data from 20 trials. No prompts will occur during baseline. Reinforcement will be noncontingent on a F I - 60-second schedule. Should the data indicate correct performance in more than 50% of the initial baseline trials, additional 20 trial baseline sessions will be conducted until the data stabilizes for minimum of three baseline sessions. Should the completed baseline indicate performance at more than 50% correct, begin training at the last stage of the phase. Should the cmpleted baseline indicate performance at less than 50% correct, begin training at the first step of the phase.

Should the baseline reveal performance at more than 50% correct in phases V through N, introduce a novel display object and sample and probe for generalization. Reinforce correct responses during this probe.

GENERALIZATION PROBE

A generalization probe will include five trials, one trial on each of five novel objects. Data will be converted to percent correct. Generalization will have occurred when *S* gets 80% correct for two consecutive probes. Generalization probes will be conducted at *E*'s discretion.

SETTING AND PROCEDURES FOR INTERVENTION

The *S* and *E* will be seated opposite one another at a training desk. The egg carton will be placed directly between the two with its long axis running approximately 8 inches from the *S* edge of the table. Tape a small 3" square of white paper half the distance between the carton and the *S*'s edge of the table. Data sheet and reinforcers may be placed at *E*'s discretion.

PHASE I: INSTALLING THE RESPONSE TOPOGRAPHY

Each session will include 20 trials. At the beginning of each trial, eight wooden blocks will have been placed in the pockets of the shortened egg carton. A ninth block will have been placed on the 3" white square. A trial will begin with the *E* signing "same" above the sample object (block) and simultaneously saying "Same, Rene." The *S* will then grasp the sample with her right hand and select a "match" from the carton with her left hand. She will raise the matching objects to her chest line and touch them together to terminate the response. The *E* will simultaneously obtain the matched objects from the *S* and reinforce the *S*, initiating a new trial as the program directs.

Intervention procedures for this phase will involve the following use of prompts:

1. The *S* will be given the verbal and signed cue "same."

2. Should the *S* fail to respond within 15 seconds, the E will touch prompt the *S* by touching her hands with his index fingers and guiding them to initiate the response.

3. Should *S* not respond appropriately to the touch prompt, the *E* will totally prompt the *S* through the response.

4. *E* will reinforce all prompted trials until *S* performs correctly on 50% of the trials unprompted. On meeting that Criterion, discontinue reinforcing prompted trials.

Data will be taken trial-by-trial; "t" will indicate a correct response (unprompted) and "-" will indicate a prompted response. "0" will indicate no response or an inappropriate response. Data will be graphed as % correct (unprompted). Minimum criterion for this phase will be three consecutive sessions at 90% correct.

PHASE II: INTRODUCING A DISTRACTOR

Each session will include 20 trials. Trials will be conducted as in phase I except the display will be altered in the following pattern:

Step A: One block will be replaced by one 1" wooden ball so that the display contains 7 blocks and 1 ball.

Step B: One block will be removed. The display contains 6 blocks and one ball.

Step C: 5 blocks, 1 ball

Step D: 4 blocks, 1 ball

Step E: 3 blocks, 1 ball

Step F: 2 blocks, 1 ball

Step G: 1 block, 1 ball

Criterion for steps II-A through II-F is two sessions at 90% or better. Criterion for step II-G is three sessions at 90% or better on a VR-5 schedule of reinforcement.

PHASE III: REVERSING THE OBJECT-DISTRACTOR RELATIONSHIP

Each session will include 20 trials. Trials will be conducted as in phase I except the sample will be a ball. Display will be altered in the following pattern:

Step III-A: 8 balls

Step III-B: 7 balls, 1 block

Step III-C: 6 balls, 1 block

Step III-D: 5 balls, 1 block

Step III-E: 4 balls, 1 block

Step III-F: 3 balls, 1 block

Step III-G: 2 balls, 1 block

Step III-H: 1 ball, 1 block

Criterion for steps III-A through III-G is two sessions at 90% or better. Criterion for Step III-H is three sessions at 90% on a VR-5 schedule of reinforcement.

PHASE IV: ESTABLISHING A TWO-FACTOR DISCRIMINATION

Each session will include 20 trials. Four blocks and four balls will be presented in the display (their positions randomized between sessions). One block and one ball will be used as samples respective to the following pattern:

Step IV-A: E will alternate 10 consecutive trials with each sample so that a given session will consist of 10 trials of matching blocks followed by 10 trials of matching balls. Separate data will be kept on trials with blocks and trials with balls. Criterion will be two consecutive sessions at 90% correct on both samples on a VR-5 reinforcement schedule.

Step IV-B: E will randomize the presenting pattern so that sets (randomly generated sequences of from one to five trials) of block trials are interspersed with sets of ball trials. Reinforcement will occur on a VR limited hold schedule. The S will be reinforced only for correct (unprompted) responses which occur in the first trial of a given set of trials (i.e., After a sequence of from one to four unreinforced trials in which the sample object is a ball, a "change over" occurs. In the change over the E replaces the ball sample object with the block sample object). Reinforcement is now available during the first trial of the block sequence. Reinforcement is not available during the second trial of the block sequence, nor any other trial until the next change over (this time from block to ball) occurs.

Data will be taken on correct (independent) change over responses (+) and prompted changeover responses (-). Data will be graphed as % correct of change over discriminations. Criterion will be three consecutive sessions at 90% correct for each session. Reinforcement for prompted changeover trials may be omitted at the trainer's option.

Step IV-C: The "limited hold" aspect of the changeover condition for reinforcement will be lifted. S will be changed to a VR-5 schedule of reinforcement. Criterion will be three sessions at 90% correct responding based on trial-by-trial data.

PHASE V THROUGH XIV: INTRUDUCING NOVEL OBJECTS

Beginning in this phase, replace the short (8 pocket) egg carton with a complete (12 pocket) carton. Otherwise, the setting remains unchanged.

Step A: A session will consist of 20 trials. Trials will be conducted as in Phase I.

The display will contain one each of the learned matching objects. The remainder of the display pockets will contain the novel matching objects so that in Phase V the display will contain one block (learned matching object), one ball (learned matching object), and 10 beads (novel matching objects). (In Phase VI, Step A, the display will contain one block, one ball, one bead, and nine novel matching objects, etc., through Phase XIV.)

Step A_2, A_3, A_4, ... A_N: Subtract one novel matching object from the display per step until only one novel matching object remains. Criterion will be one session at 90% correct on Step A_N.

Step B: Sessions will be conducted as in step IV-B except sets of trials including all previously introduced sample objects will be randomly interspersed across sessions.

PHASE VI THROUGH XIV

Repeat format of phases VI introducing one novel matching object in each phase.

CORRECTIONAL PROCEDURES

Problem: S fails to search the carton thoroughly. S fails to find matching object when it is placed at extreme end of carton.

Recommendation: Assign a number (1 through 12) to each pocket in the egg carton and (using standard tables of random numbers or any valid technique for generally random probability) generate formal patterns for ordering the trial-by-trial placement of target display objects. This will reduce the probability that E is inadvertently shaping limited search patterns by differential placement of target display objects. This technique is best employed after S has been working under a relatively lean schedule of reinforcement.

Problem: *S* develops unreasonably long response latencies. The time *S* takes between initiating a response (first touching the sample) and the completion of that response (finally touching the matched objects together at chest line) may become inordinately long for various reasons. These reasons include the accidental conditioning of superstitious behaviors and the accidential differential reinforcement of prolonged latencies.

Recommendation: Using a metronome or stop watch, obtain a trial-by-trial measure of the individual response latencies for three sessions. Rank the latencies and obtain the median latency. Differentially reinforce only correct responses which occur within a time limit equal to or less than the obtained median latency. Repeat the above procedure every three sessions until the problem is reversed.

Problem: The *S* is constantly involved in self-stimulation with her hands which often precludes her attending to the response cue. She misses the sign which indicates a new trial is beginning.

Recommendation: Before initiating a new trial, prompt *S*'s hands to a "wait" position. This may mean folding them together on the desk top or prompting her to grip the desk edge (hands apart). The particular position is not important. It is, however, important that *the same position be returned to before every trial* and that the *S* be prompted to maintain the position until the moment when the response cue is given.

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BLIND MULTIHANDICAPPED: BROADENING THE SCOPE OF ORIENTATION AND MOBILITY

Darrell Stallworth

Classical orientation involves evaluating the client's awareness of his body position (or himself) within his environment. Mobility involves evaluating the client's travel ability, capability, and confidence in negotiating areas safely and independently. An evaluation of the client's sensory capacities and limitations of the remaining senses must also be considered.

Orientation and mobility originated during World War II, when this country found itself with a surplus of returning blinded soldiers, and a uniform and effective way of teaching them to regain independence was needed.

Educators must be made aware of the blind, multihandicapped person's needs and potentials, a segment of our blind population whose needs have long been overlooked.

The following narrative describes a typical situation which exists in a residential facility. Given a group of 30 individuals who are labeled mentally retarded, one individual is also totally blind. Because most multihandicapped individuals will spend their lives in a residential facility, one of our major goals is to bring the multihandicapped individual to a level where he is as self-sufficient as possible. The blind, multihandicapped individual is in the minority and the trend has been to foster dependency. It is easier to bathe, feed, and clothe the one blind individual than to spend the time to train him.

Client X is a 25-year-old male. Prior to training he sat on a unit listening to his transistor radio, rocking while gouging his eye sockets with his thumbs. When mealtime came he was taken by the hand and led to a table. His food was then brought to him. When time came for a haircut he was taken to the barber shop. When he needed medical attention he was taken to the clinic. Aid was also given for all self-help skills.

Twenty months ago daily training began on a one-to-one basis. With orientation and mobility training given priority, the client received daily training sessions in concept formation (body imagery and spatial relationships), self-help skills (using a washing machine and dryer, using a braille watch, using money, eating, and bed making), and using a Perkins braille writer.

Today this client travels independently to the clinic, barber shop, canteen, workshop, gym, and religious center. He uses a long cane and travels by rote. He uses a braille watch proficiently, launders his own clothes, picks up his own tray at mealtime and locates his designated seat at a table, makes his bed, brailles his name with the use of a braille writer, and can tactually read four and five-letter words. He is now working at the campus workshop for two hours each day.

Because of a lack of education and training this client will never function as an independent individual.

What potential could this client have reached had education and training been offered to him 25 years ago?

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TEACHING SIMPLE DISCRIMINATIONS WITHOUT ERRORS

Wesler H. Perlman

We say that children are discriminating between things in the environment when they demonstrate that they can reliably tell the difference between two things. "Telling the difference" is not restricted to a verbal response. Matching a red block to a red block in a setting where red and green are present is to "tell the difference" between two things. To name the colors is also another way to tell the difference between two colors.

A Way to Teach Discriminations

Applied behavior analysis introduced a systematic way to teach discriminations. Typically, when teaching the difference between red and green, the child was rewarded for matching red to red in the presence of red and green. The placement of red and green in the stimulus array was randomized to guard against the development of a position preference. Repeated presentations of red continued until the child reached criterion (20 correct consecutive responses or 95% correct for a session of 50 trials). Once criterion was reached, green was then taught in the same fashion. When green reached criterion, then red and green were presented in a mixed fashion. Typically, at this point a significant decrease in correct responses takes place. Often the child responds at a chance level. Over a period of perhaps hundreds of trials the child would learn to match red to red and green to green. Sometimes discriminations taught in this way may never be learned by the child. Nevertheless, when the discrimination was learned, many errors were made. In a very practical sense, the more errors children make, the fewer things they can learn in a specified time frame. It has been said that we learn from our errors and that it is a "natural" part of the learning process. It is true that we learn from our errors, but some of us learn to make another error from a previous error. This seems to be the case with autistic and retarded youngsters. To make no errors is also "natural" if the environment happens to be arranged in that manner.

Errorless Learning

Terrace made a breakthrough in laboratory research by teaching discriminations errorlessly. This was done by fading along some dimension (intensity, hue, etc.) of the stimulus. This concept stimulated much research and became the foundation for many teaching regimes. True fading procedures rely on some costly device to fade the stimulus or on teacher preparation of many sequenced materials to fade the stimulus. These procedures have been very effective, but very costly to deliver in terms of money and time invested.

Terrace's focus of control was the stimulus, with little attention given to the response. Errorless learning techniques are certainly not limited to fading some aspects of a stimulus.

A new way to teach discriminations without errors has evolved. It involves more precise control of the relationship of the stimulus and response components. The environment is arranged in such a way that it is almost impossible to make an error. Therefore, the consequence becomes a much less salient feature of teaching a task; that is to say, we supply consequences, but do not rely so heavily on them when teaching a task. The arrangement of the environment, in and of itself, makes the occurrence of an incorrect response highly unlikely.

In the example discussed earlier, teaching a child to match red to red or green to green in the presence of red and green, when red and green meet criterion, their presentations are mixed and a significant decrease in correct responses takes place. Educators started at this point because they saw that they had not taught anything up to that point as evidenced by the child's behavior. The author's point of departure from standard teaching was to begin by teaching both response presentations mixed from the beginning. The author thanks the many autistic, retarded, and other handicapped children for telling us how to teach them.

Purpose

The purpose of this paper is to present a procedure for teaching discriminations without errors. It certainly is not exhaustive and does not claim to be. It is not experimental in the sense that particular hypotheses were not tested. It is scientific and is based upon data. Much of the data are anecdotal. There is no experimental design, because it is not an experiment. This is simply a presentation of a procedure which is a practical tool for teaching basic form discriminations, color discriminations, same-different concepts, labeling objects, etc., without errors.

At this point the order of presentation and the placement of colors in the array are both randomized. If an error is made, the child is given one more chance. If a second error is made, the child returns to the former level of training. Typically, once a student completes the entire sequence, no further training is needed.

Extensions

The author has taught many autistic youngsters many different types of discriminations using this procedure. Usually, it requires 80 to 90 trials to teach a discrimination pair. The author has youngsters to label objects with word cards in a matter of 20 minutes. Prior to this training, literally thousands of trials and hundreds of hours were invested to teach these children simple discrimination. Despite this, many times these youngsters never learned the task.

The author has taught three-dimensional shapes in relation to two-dimensional shapes, two-dimensional colors in relation to two-dimensional colors, discrimination between B and D, receptive labeling of objects (word cards, signs, verbal), expressive labeling of objects, same and different concepts, spatial relations, and simple commands (pick up, push).

Prerequisites--In our example (matching colors).

1. Sitting at desk.
2. Attending--looking at the stimulus presented and the stimulus array. The child should not be given the opportunity to manipulate the stimulus presented unless he/she is attending to the stimulus presented. This becomes much more of a problem when the stimulus presented is auditory. The next section will discuss such related problems.

Procedure for Errorless Learning

The procedure is best understood by the accompanying data sheet. This example will use a very simple discrimination--matching three-dimensional colors to three-dimensional colors. After the basic procedure is presented, a brief discussion of teaching more difficult tasks will be presented.

Key descriptors--stimulus array, stimulus presented, order of presentation, response made by student.

Stimulus Array--objects, color, etc., that are in the child's view on the desk; the desk top is divided into two equal parts by marking with masking tape.

Stimulus Presented--object, color, written word, spoken word, etc., that is presented to the child and which begins the trial.

Order Of Stimulus Presentation--the systematic order or pattern in which stimuli are presented. For example, a 1:1 presentation is an alternating of stimulus A and B (A, B, A, B, etc.). A 2:2 presentation patterns stimulus A and B in this fashion: A, A, B, B, A, A, B, B. A 1:1:2:1:1 presentation patterns stimulus A and B in this fashion A, B, A, A, B, A, B, B, A, B.

Response Made by Student--placement of color to appropriate color in stimulus array or putting word card on appropriate object.

Expected Results

When the child is presented with a red block, we want the child to put that red block next to the red block in stimulus array; when the child is presented with a green block, we want the child to put that green block next to the green block in the stimulus array. The position of the stimuli in the stimulus array are randomized on each trial. The order of presentation is also randomized.

Position I--constant position of stimulus or stimuli in stimulus array. Stimulus A on left, stimulus B on right (red on left, green on right). (See data sheet--detach to follow procedure.)

Position II--constant position of stimulus or stimuli in stimulus array. Stimulus B on left, stimulus A on right (green on left, red on right).

Level A (see data sheet)

Position I--one color in stimulus array.

A_1--order of presentation 1:1 (A, B, A, B or red, green, red, green).

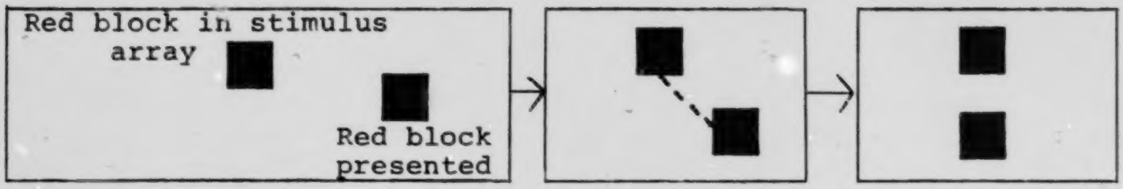
Criterion (in order to move to A_2)--10 consecutive correct responses (5 red, 5 green).

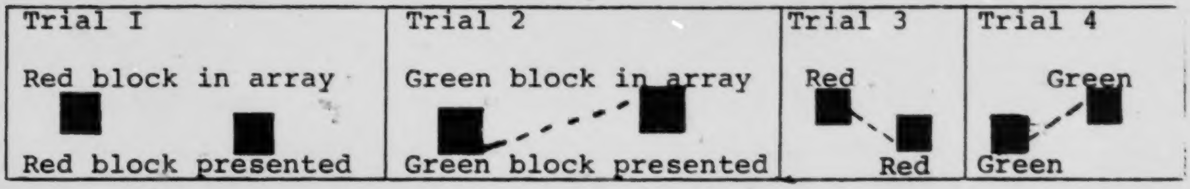
Top View of Desk

Level A_1--Position I, one color in stimulus array 1:1 order of presentation.

Criterion--10 consecutive correct responses (5 red, 5 green).

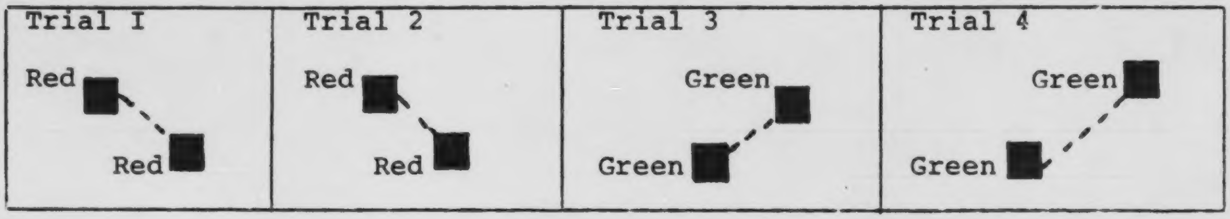
Sequence of trial 1:


Red block in stimulus array
Red block presented


Trial I
Red block in array
Red block presented
Trial 2
Green block in array
Green block presented
Trial 3
Red
Red
Trial 4
Green
Green

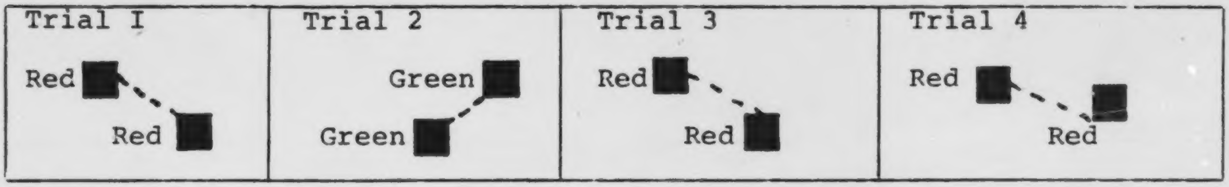
Level A_2--Position I, one color in stimulus array 2:2 order of presentation A, A, B, B, A, A, B, B (red, red, green, green, red, red, green, green).

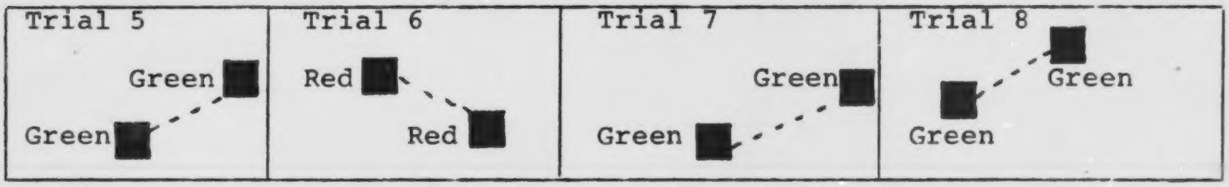
Criterion--8 consecutive correct responses.


Trial I
Red
Red
Trial 2
Red
Red
Trial 3
Green
Green
Trial 4
Green
Green

Level A_3--Position I, one color in stimulus array 1:1:2:1:1:2:1:1 order of presentation A, B, A, A, B, A, B, B, A, B (red, green, red, red, green, red, green, green, red, green).

Criterion--10 consecutive correct responses.


Trial I
Red
Red
Trial 2
Green
Green
Trial 3
Red
Red
Trial 4
Red
Red


Trial 5
Green
Green
Trial 6
Red
Red
Trial 7
Green
Green
Trial 8
Green
Green

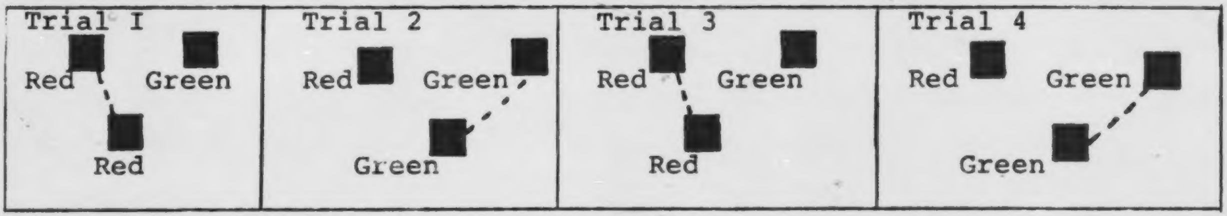
Note--The order of presentation is the only difference among A_1, A_2, A_3.

Level B--Position I, two colors in stimulus array.

B_1--Position I, two colors in stimulus array 1:1 order of presentation, A, B, A, B (red, green, red, green).

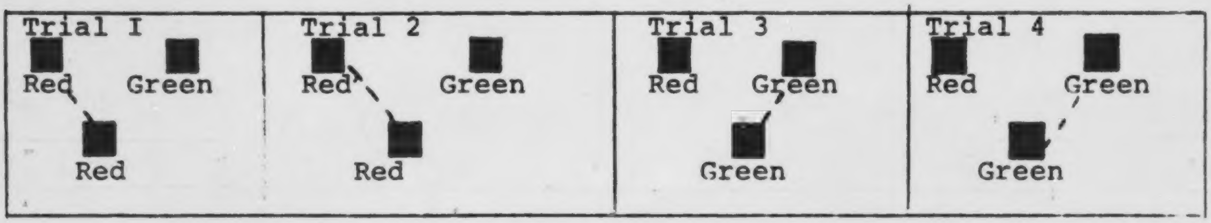
Criterion--10 consecutive correct responses (5 red, 5 green).

If student makes an error, give student one more chance. If student makes a second error, go back to the former simpler level (in this case A_3).


Trial I
Red
Green
Red
Trial 2
Red
Green
Green
Trial 3
Red
Green
Red
Trial 4
Red
Green
Green

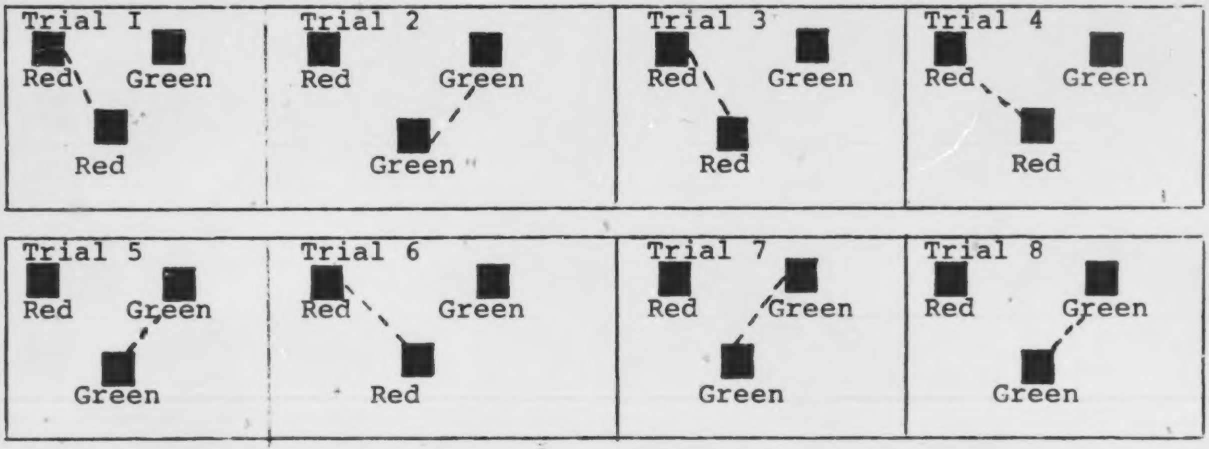
B_2--Position I, two colors in stimulus array, 2:2, order of presentation, A, A, B, B, A, A, B, B, (red, red, green, green, red, red, green, green).

Criterion--8 consecutive correct responses.


Trial I
Red
Green
Red
Trial 2
Red
Green
Red
Trial 3
Red
Green
Green
Trial 4
Red
Green
Green

B_3--Position I, two colors in stimulus array, 1:1:2:1:1:2:1:1, order of presentation A, B, A, A, B, A, B, B, A, B (red, green, red, red, green, red).

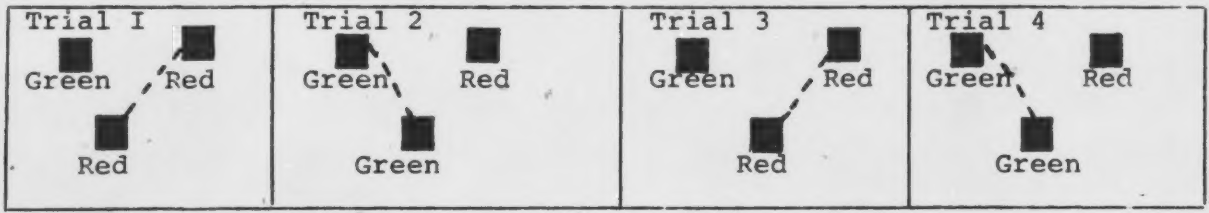
Criterion--10 consecutive correct responses.


Trial I
Red
Green
Red
Trial 2
Red
Green
Green
Trial 3
Red
Green
Red
Trial 4
Red
Green
Red
Trial 5
Red
Green
Green
Trial 6
Red
Green
Red
Trial 7
Red
Green
Green
Trial 8
Red
Green
Green

Level D--Position II, two colors in stimulus array. Note: Level C was skipped because only one color in stimulus array. If student makes an error at this point, give the student one more chance. If student makes second error, go to Level C_3.

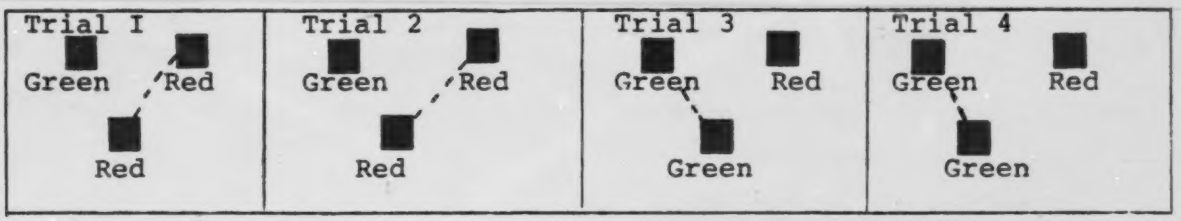
D_1--Position II, two colors in stimulus array, 1:1, order of presentation A, B, A, B (red, green, red, green).

Criterion--10 consecutive correct responses.

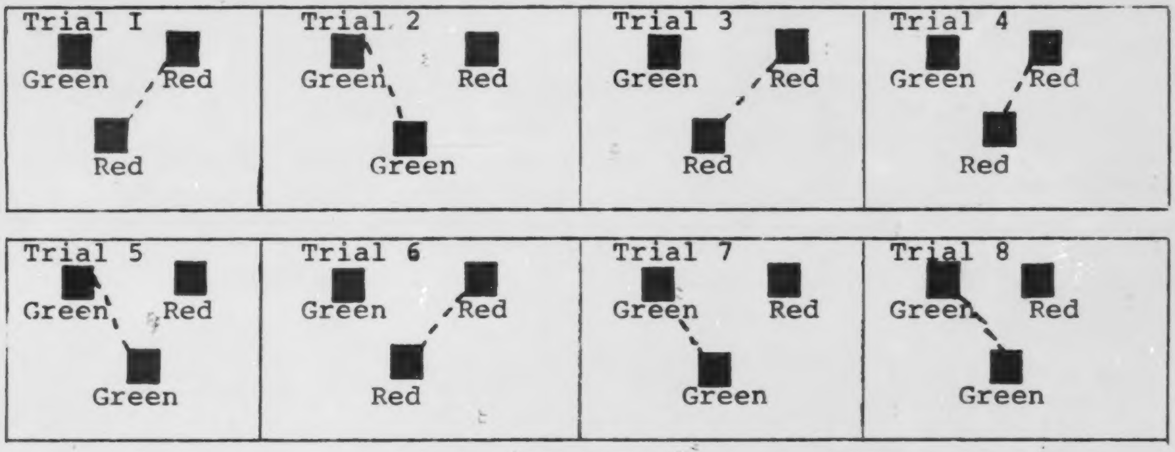

Trial I
Green
Red
Red
Trial 2
Green
Red
Green
Trial 3
Green
Red
Red
Trial 4
Green
Red
Green

D_2--Position II, two colors in stimulus array, 2:2, order of presentation, A, A, B, B, A, A, B, B (red, red, green, green).

Criterion--8 consecutive correct responses.


Trial I
Green
Red
Red
Trial 2
Green
Red
Red
Trial 3
Green
Red
Green
Trial 4
Green
Red
Green

D_3--Position II, two colors in stimulus array, 1:1:2:1:1:2:1:1, A, B, A, A, B, A, B, B, A, B (red, green, red, red, green, red, green, green, red, green).


Trial I
Green
Red
Red
Trial 2
Green
Red
Green
Trial 3
Green
Red
Red
Trial 4
Green
Red
Red
Trial 5
Green
Red
Green
Trial 6
Green
Red
Red
Trial 7
Green
Red
Green
Trial 8
Green
Red
Green

Factors That Effect Difficulty of the Task

If items in the stimulus array are very similar (pen and pencil), then the discrimination between them is more difficult. Therefore, at the beginning of training, use objects that are very dissimilar and then proceed to more closely related shapes. In other words, make the task easy by making the difference between things very obvious.

The nature of the stimulus presented can have a big effect on the difficulty of the task. For example, if the task was to have a child label an object (cup) with a work card (cup), the stimulus presented would be the word card. Since the stimulus presented is visual, it is easier to determine whether the child is attending to the stimulus presented. Also, it is easier for a child to attend to a visual stimulus as opposed to an auditory stimulus because of its permanence. The auditory stimulus is evanescent--it is there and gone. Perhaps a way to increase the probability of attending to an auditory stimulus is to arrange an additional cue announcing the beginning of a trial. If we say "cup," the child is to pick up the cup. The stimulus presented is the word cup. The stimulus array consists of a cup and a ball. The response made by the child is to pick up the cup. This would be called receptive labeling. In the example of the word card, in relation to the cup, the response made by the child is to place the word card on the cup. When asking a child to label objects expressively, much control is lost over the production of the response. The stimulus presented is always the same (What is this?). The author circumvented this when teaching the same-different concept. First, it was taught receptively by putting 2 same objects on the left and 2 different objects on the right. The stimulus presented was "pick up same" or "pick up different." This receptive training served to bridge the gap for expressive labeling. Signs in their "pure" form are evanescent but because they are visual signs, they can be made more permanent during training.

A Word of Thanks

The author wishes to thank all the children, parents, students, and staff at the Center for Behavioral Studies in Denton, Texas, at North Texas State University for their support.

Dr. Moira MacArthur-Whitehouse and I first developed a close approximation to this procedure during the spring of 1975. Our hope was to make teaching a little easier for kids, parents, students, and teachers.

Wesler H. Perlman
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Dallas, Texas 75219

Child's name: Date:

Trainer's name: Length of Session:

Reinforcer Used: Reinforcement Schedule:

POSITION I

A Objects Used	Order of Presentation	1 Color in Stimulus Array
Red-left ---------- Green-right	A_1 1:1	
----------	A_2 2:2	
----------	A_3 1:1:2:1:1	

B Objects Used	Order of Presentation	2 Colors in Stimulus Array
----------	B_1 1:1	
----------	B_2 2:2	
----------	B_3 1:1:2:1:1	

POSITION II

C Objects Used	Order of Presentation	1 Color in Stimulus Array
Red-right ---------- Green-left	C_1 1:1	
----------	C_2 2:2	
----------	C_3 1:1:2:1:1	

D Objects Used	Order of Presentation	2 Colors in Stimulus Array
----------	D_1 1:1	
----------	D_2 2:2	
----------	D_3 1:1:2:1:1	

Ramdomization of Presentation and Randomization of the Array

BLIND-MULTIHANDICAPPED SAN ANTONIO PROJECT

Bob Counts

Community programs for the handicapped appear in many forms and are eclectic in their provision of services. Community programs for the multihandicapped are fewer in number. The Blind-Multihandicapped San Antonio Project is a community-oriented program under the special projects division of the Texas State Commission for the Blind.

Existing Vocational Rehabilitation Services for the Blind

The Texas State Commission for the Blind is a vocational rehabilitation agency. Historically, vocational rehabilitation agencies have provided services to handicapped individuals who have demonstrated vocational abilities. The transition of services for the handicapped within vocational rehabilitation agencies has followed closely the evolution of man's experience with the handicapped. As handicapped individuals displayed more and more ability to live full and meaningful lives, they have demanded and received more services. Vocational rehabilitation educators, on both the federal and state level, have realized the need for services to the handicapped who do not possess vocational potential. At present, two programs exist within the Texas State Commission for the Blind that reflect these needs. The Older Blind Americans Program is a national program which has both federal funding and backing. The Visually Handicapped Children's Program is a statewide program within the Texas State Commission for the Blind and is totally state supported. Both the Older Blind Americans Program and the Visually Handicapped Children's Program were designed to provide services to individuals who do not possess vocational potential.

As indicated by the titles of these programs, they are restricted to particular age groups. The VHC Program provides services to persons between the ages of 0-15, while the OBA Program provides services for those 55 and older. Persons between the ages of 16 to 54 must demonstrate vocational potential in order to receive the same services. Vocational rehabilitation agencies are prohibited under existing legislation to provide services to these individuals unless it can be demonstrated that there exists reasonable expectation that provision of services will result in gainful activity.

Surveys reveal that individuals with multihandicaps are judged as having less potential for gainful activity by most rehabilitation workers. It is obvious that the multihandicapped individual has the most need for rehabilitation services. But, unless the multihandicapped individual or his advocate can convince the rehabilitation worker that he possesses vocational potential, the multihandicapped individual will not receive services.

History of Independent Living Rehabilitation

Interest in the rehabilitation of the severely disabled and in the inclusion of services for independent living goes back over a decade. The first legislation introduced that concerned independent living rehabilitation services was H.R. 361, later reintroduced as H.R. 5416, both presented in 1959. The purpose of the legislation as summed by following excerpt was to assist:

> The states in rehabilitating handicapped individuals who, as a result of such rehabilitation, may be expected to achieve such ability of independent living as to dispense with, or largely dispense with, the need for institutional care or, if not institutionalized, to dispense with, or largely dispense with, the need for an attendant, thereby reducing their burden upon others and contributing to their dignity and self-respect.

Five additional House bills written primarily by the National Rehabilitation Association were introduced in 1961, with similar language and intent. In 1972 and 1973, independent living rehabilitation was reintroduced and pocket vetoed by President Nixon.

These provisions would have focused vocational rehabilitation on the severely disabled and authorized a formula grant program which would allow states to provide services to persons without vocational potential to live more normally and independently. Following the failure of the second bill, the administration and the Congress worked out a compromise. The result of the compromise was that the administration agreed to conduct a study to investigate the ability of rehabilitation to serve the most severely handicapped. The Rehabilitation Act of 1973 (P.L. 93-112) placed emphasis on the most severely handicapped, and there were many questions to be resolved.

The Blind-Multihandicapped San Antonio Project, along with five other projects funded across the country, are intended to investigate several populations of severely handicapped persons. The provisions for these grants were authorized under Section 130 of the Rehabilitation Act.

> Sec. 130. (a) The Secretary of the Department of Health, Education, and Welfare shall conduct a comprehensive study, including research and demonstration projects, of the feasibility of methods designed (1) to prepare individuals with the most severe handicaps for entry into programs under this Act who would not otherwise be eligible to enter such programs due to the severity of their handicap, and (2) to assist individuals with the most severe handicaps who, due to the severity of their handicaps or other factors such as their age, cannot reasonably be expected to be rehabilitated for employment but for whom a program of rehabilitation could improve their ability to live independently or function normally

within their family and community. Such study shall encompass the extent to which other programs administered by the Secretary do or might contribute to the objectives set forth in clauses (1) and (2) of the preceding sentence and the methods by which all such programs can be coordinated at Federal, State, and local levels with those carried out under this Act to the end that individuals with the most severe handicaps are assured of receiving the kinds of assistance necessary for them to achieve such objectives.

Deaf-Blind

As indicated by its title, the Blind-Multihandicapped Project is designed to serve individuals who have more than one disability. Foremost among the multiply handicapped who require extra and special services for their education and rehabilitation are those persons who are both deaf and blind. As a result of the rubella (German measles) epidemics of 1963 and 1965, approximately 30,000 babies were seriously affected by this seemingly mild disease. It is anticipated that thousands of blind, deaf, and deaf-blind children will be applying for educational and rehabilitation services as a result of the 1963 and 1965 rubella epidemic. As an example, a recent study of multiply handicapped blind youngsters, covering all known blind children in California, found that 50% of the 1,900 children in the survey were multiply handicapped. This population of multiply handicapped blind individuals will pose new problems for education and the rehabilitation worker.

The data to be presented involves this project's efforts with one deaf-blind client named Emma. Emma is 18 years old, a female, who had developed some manual communications which were understood by her and her family. She had been introduced to the manual alphabet, but did not demonstrate any consistent use of it.

Medical Background

Medical reports indicate that both Emma's visual and hearing loss resulted from intrauterine insult. Audiometric findings place the hearing loss in the severe to profound range bilaterally. Ophthalmological examination revealed a visual acuity of 20/200 in both eyes with best correction as a result of optic atrophy.

Educational Background

In November of 1975, when we first began to work with Emma, she was a student in the Regional Day School for the Deaf, located in San Antonio, Texas. Emma began these classes in the fall of 1974; prior to this, she had been in classes for the mentally retarded.

When this project first entered Emma's classroom, the teachers expressed concern about Emma's ability to benefit from the deaf classes. They were attempting to teach Emma to identify her body parts when she was shown the corresponding picture and the written word. It was agreed that this project would work with Emma on such educationally related tasks in order to augment her scholastic abilities.

The data to be presented depicts the strategy of introducing to Emma fingerspelling of body parts. This was done in such a manner as to allow Emma the opportunity to be expressive and receptive in the manual alphabet. The following is the list of body parts taught Emma:

1. Nose
2. Eye
3. Ear
4. Mouth
5. Arm
6. Hand
7. Fingernail
8. Foot
9. Hair
10. Head
11. Chin
12. Chest
13. Finger
14. Leg

Figure 1 demonstrates Emma's progress in learning how to fingerspell body parts when asked to do so. The strategy was to show Emma a body part and ask her to fingerspell it; if she was unable to fingerspell it, she was shown the correct spelling and was given an opportunity to mimic the trainer. Correct responses were recorded only if Emma produced the correct fingerspelling without demonstration. Reinforcement for all programs consisted of a signed "good" or "right," paired with approving facial expression and touch.

Identification of body parts when fingerspelled was begun on the fifth day of the fingerspelling program. This was done in order to give Emma an opportunity to develop receptive manual communication and to enhance her ability in expressive manual communication. It is interesting to note that Emma's understanding of the fingerspelling exceeded her ability to fingerspell the body parts. A correct response was recorded when Emma pointed to the part of body being fingerspelled. The results are shown in Figure 2.

Copying written word for body parts was begun on the third day of the fingerspelling program. Since Emma had enough vision to recognize large print, it was decided to utilize her vision in her programming. The procedure consisted of writing the words in large print 3/8" to 1/2" and having her copy the words. A correct response consisted of correctly duplicating the words written. Emma had previous experience in copying words. Her classroom teacher had used this task to occupy Emma while working with the other students. The data in Figure 3 reflect this ability.

Writing body parts when pointed to was begun on the twelfth day of the fingerspelling program. This program consisted of pointing to a body part and requesting Emma to write what body part was being pointed to. This program was the logical conclusion to the sequence of programming. Since Emma was demonstrating the ability to identify body parts as they were fingerspelled and the ability to form the written word, we hoped to teach Emma to display in written form what she had been taught with the manual alphabet. The results were astounding; in a matter of six training days, Emma was correctly writing all the body parts when requested. The results are shown in Figure 4.

In February of this year, Emma was dismissed from the Regional Day School for the Deaf. It was felt that Emma was not capable of benefiting from these classes. No alternatives were suggested except for return to the TMR or EMR classroom.

May 1, 1976, Emma was accepted into the Southwest Center for the Hearing Impaired, located in San Antonio. Emma has made steady progress since entry into that program. This project has continued to work with Emma and the staff at the Center.

During the period between Emma's dismissal from the Regional Day School for the Deaf and her entrance into the Southwest Center for the Hearing Impaired, new programs were begun and some are still in process. The two programs presented were a continuation of training in manual communication.

The results shown in Figure 5 reflect an attempt to broaden Emma's discrimination abilities. The colors taught were:

1. Red
2. White
3. Blue
4. Green
5. Pink
6. Purple
7. Tan
8. Black
9. Brown
10. Yellow
11. Orange

Each session began when the trainer demonstrated the goal of the session. The trainer presented the color paired with the sign for that color. This procedure was continued until each sign-color had been demonstrated. The trainer then chose a color at random and requested the sign. Correct responses were recorded when the correct sign was given. Incorrect responses were corrected by the trainer's demonstrating the correct sign until Emma produced the correct sign. Reinforcement for correct signs were a signed "right" or "good." The criterion for completion of the program was 100% on five consecutive training sessions. Criterion was reached within 15 training sessions.

The results of Figure 6 reflect a further attempt to increase Emma's functional manual communications. The foods and food-related items taught were:

1. Egg
2. Apple
3. Potato
4. Strawberries
5. Watermelon
6. Chocolate
7. Cookie
8. Vegetable
9. Cracker
10. Grapefruit
11. Bread
12. Orange
13. Water
14. Banana
15. Peach
16. Cherry
17. Pineapple
18. Fruit
19. Hamburger
20. Soda Pop
21. Carrot
22. Lettuce
23. Tomato
24. Beans
25. Coffee
26. Onion
27. Pepper
28. Pie
29. Popcorn
30. Pumpkin
31. Tea
32. Ice Cream
33. Candy
34. Cake
35. Lemon
36. Sandwich
37. Salt
38. Soup
39. Sugar
40. Toast
41. Grapes
42. Pickle
43. Butter
44. Mushroom
45. Cheese
46. Corn
47. Meat
48. Milk
49. Nuts
50. Pear

On the first training day, a picture of each food/food-related item was presented; if Emma did not respond correctly in 10 seconds, the sign was demonstrated for her. Again the trainer waited for 10 seconds, and if no sign was produced or the sign was given incorrectly, the trainer physically helped Emma form the sign. On the following sessions, the trainer pointed to the pictures of the food/food-related items; if no response or an incorrect response was forthcoming, the correctional procedures described above were implemented. Reinforcement was a signed "right" or "good." The data indicate that Emma knew a few of the signs before the program began. The slope of the graph indicates a rapid acquisition (90% correct was reached by the eleventh training session). Presently the program is still in effect and will be discontinued when Emma meets criterion. Criterion is 100% correct on five consecutive sessions.

Other training programs are in progress, and others have been completed. With the present rate of progress and with the utilization of Southwest Center for the Hearing Impaired, it is expected that Emma will re-enter the vocational rehabilitation process and go on to be involved in gainful activity.

Bob Counts, Project Director
Blind Multihandicapped Project
San Antonio, Texas

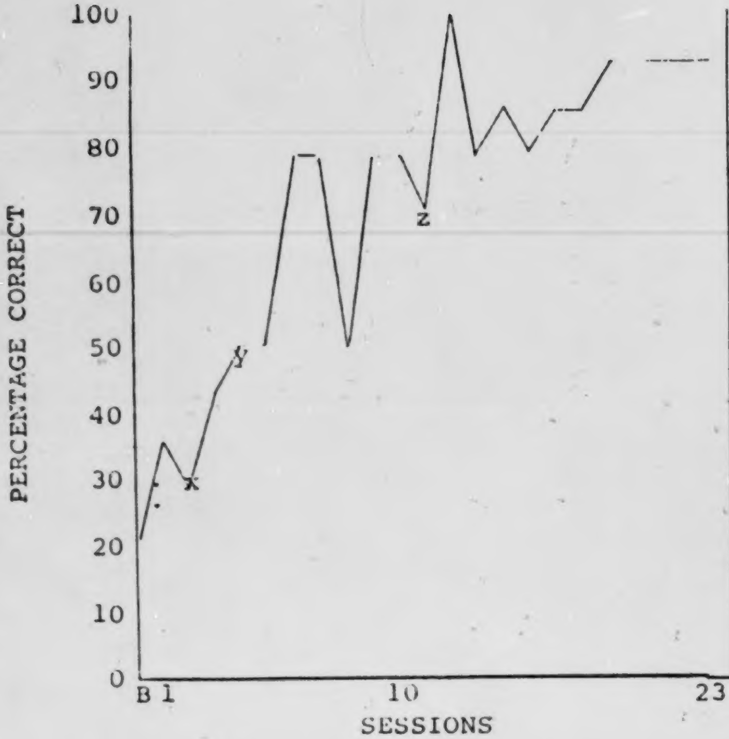

Fig. 1. Percentage correct on fingerspelling body parts.

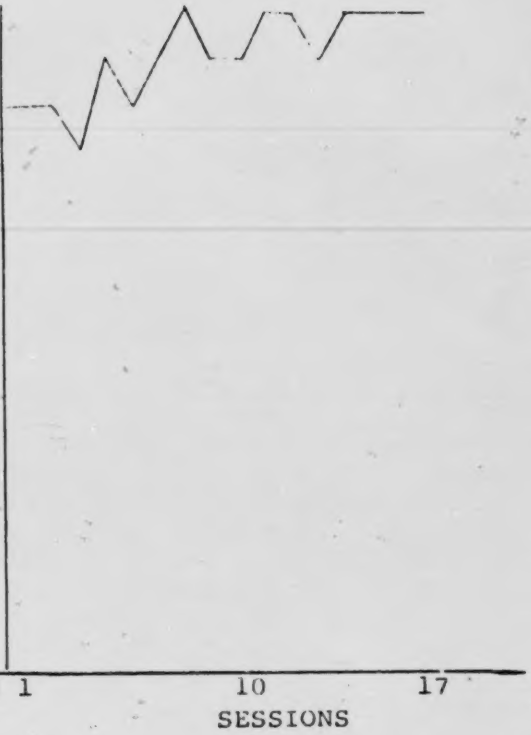

Fig. 2. Percentage correct on identifying body parts when fingerspelled.

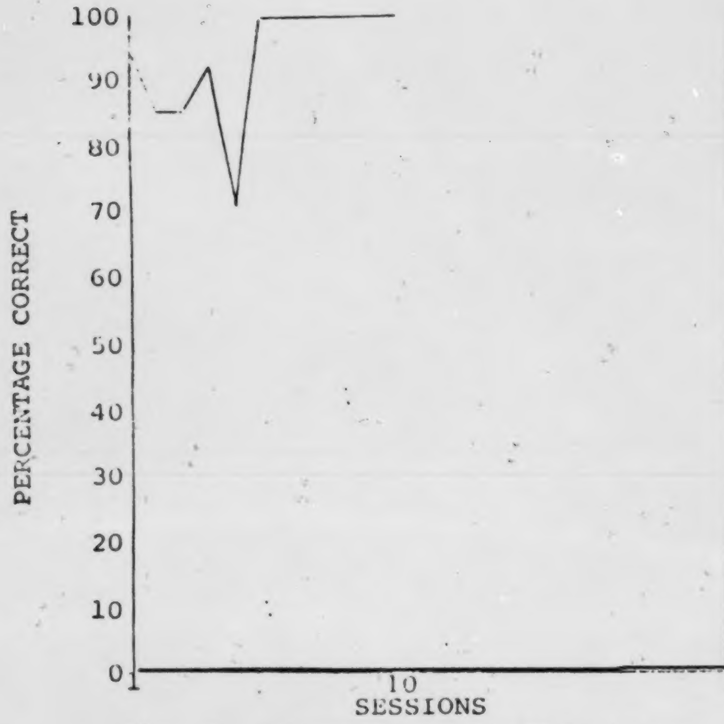

Fig. 3. Percentage correct on copying body part words.

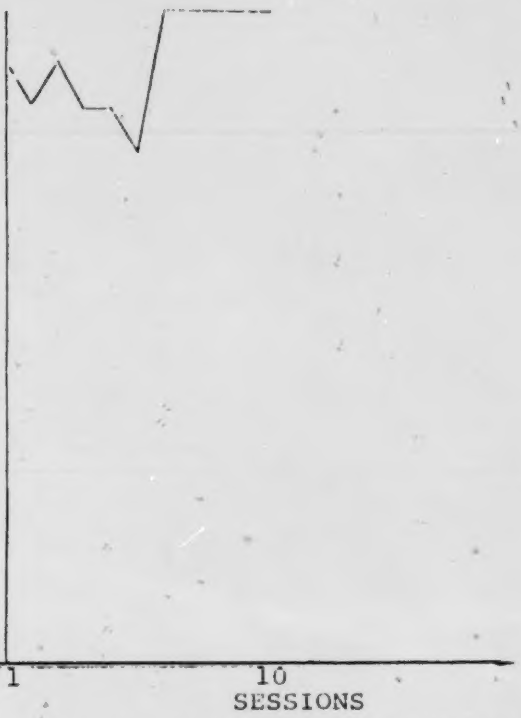

Fig. 4. Percentage correct on writing body parts when pointed to.

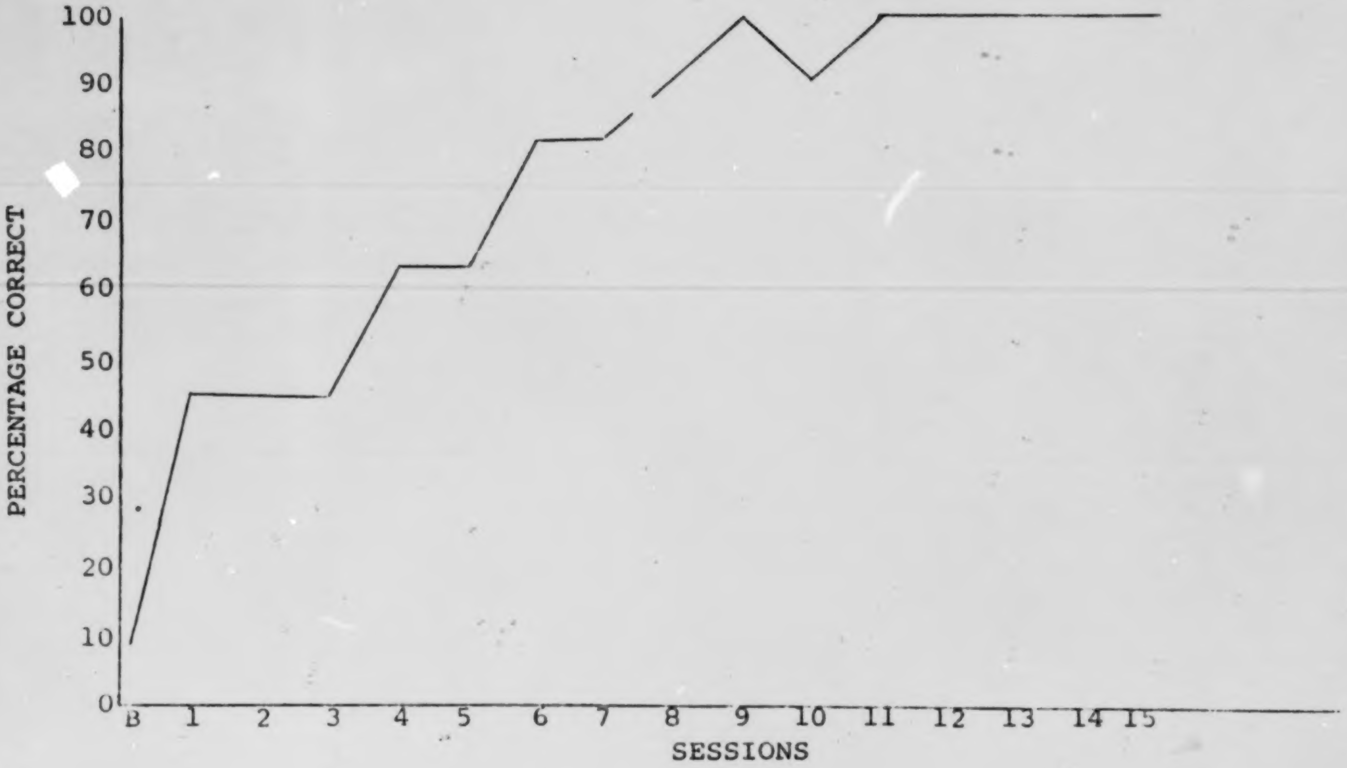

Fig. 5. Percentage correct on signing 11 colors.

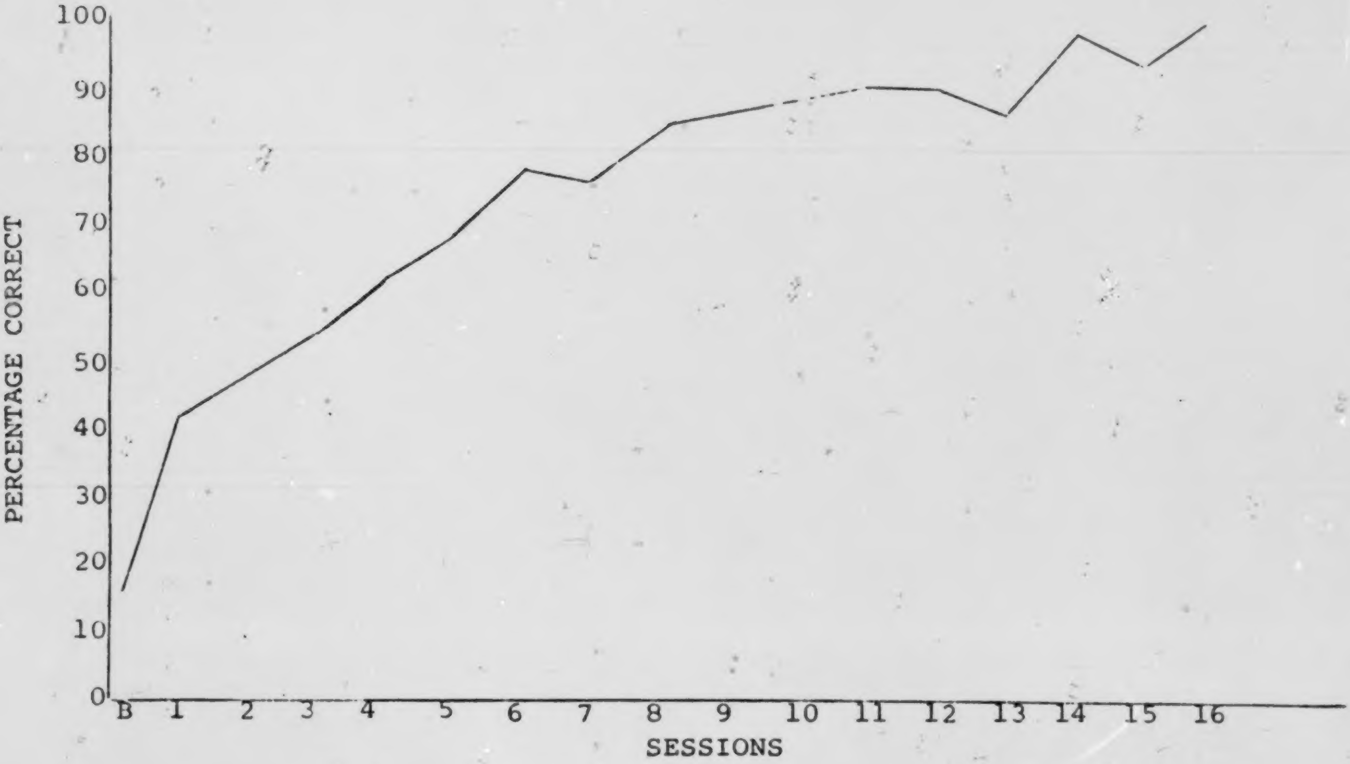

Fig. 6. Percentage correct on 50 food/food-related signs.

EDUCATIONAL AND RELATED SERVICES FOR DEAF-BLIND CHILDREN AT THE COMMUNITY LEVEL

Frances Stetson

Recently, growing interest and pressure for serving the deaf-blind school-age population in their respective home communities have become forces influencing current educational decision-making. Professional educators--whether affiliated with public or private, residential or nonresidential institutions--endeavor to assure the least restrictive educational alternative for every student. Certainly, it can be argued and easily defended that the handicapped child who has the benefit of living in his home community among family members who nurture and encourage him responds more readily to the goals of an educational program.

While the concept of "least restrictive educational alternative" is crucial, another issue which must be examined in making decisions regarding placement and programming for the handicapped child is the APPROPRIATENESS of the educational setting. When addressing this issue educators must ask:

> Are all educational and related service needs met by the resources available?
>
> Is a full continuum of services offered to meet the child's complex and constantly changing needs?

Deaf-blind children in Texas represent only 500 of the 300,000 handicapped children now being served. Though they are certainly a low incidence population, they represent a great challenge to the educators who teach them and to the administrative planners who develop programs for them.

The resources required to meet the array of needs presented by deaf-blind students are scarce and sometimes nonexistent in many parts of the state. At present, only eight teachers certified in the area of deaf-blind education are employed in Texas. Hundreds are needed. The services of occupational therapists, physical therapists, orientation and mobility instructors, highly skilled counselors, and appraisal personnel are needed to program adequately for the majority of the deaf-blind students in our programs. Yet, again, the number of trained personnel is quite small and the need for them is great.

As educators endeavor to move handicapped children along the continuum toward the least restrictive educational alternative, toward the goals of de-institutionalization and normalization, and toward community-based programming, they must constantly examine the appropriateness of the placement. Since specialized services and adequately trained personnel are not typically available in sufficient quantity and quality at the local level, the development of appropriate programs for deaf-blind children is extremely difficult.

Texas has recently committed additional resources to be channeled through a regional delivery system which may well offer the solution to this educational quandary for the severely handicapped. The previous assumption was that the district or the co-op was an adequate planning base for all handicapped children. Certainly it is adequate for the mildly handicapped population appropriately served by minimum intervention programming. As the pressure increases to serve a larger and more seriously involved population, educators must look to the region as a planning base, maximizing the utilization of all resources and the efforts of all agencies serving the handicapped; procedures must be developed for interagency coordination. Alliances must be shifted from the program level planning base to the regional level for the severely handicapped.

Highly specialized services can be delivered at the community level by the combined efforts of the local education agency, the education service centers, universities, state schools for the mentally retarded, the Texas Education Agency, the Texas Commission for the Blind, and various other supportive agencies; this would reduce the necessity for serving every deaf-blind severely handicapped child in a highly centralized, more restrictive environment.

Education service centers could provide staff development opportunities which will lead to increased capability to serve these children at the local level. The impact of this training could be felt region wide as administrators, teachers, diagnosticians, teacher aides, volunteers, and parents are presented with techniques and materials appropriate to the needs of the deaf-blind child. Special services may be contracted for by the education service center, mental health mental retardation facilities, and a variety of other sources to be delivered on a regional basis as needed by the local education agency. Itinerant consultative teachers could be employed through the service center to provide actual hands-on instruction of deaf-blind children in their community school and to consult with teachers in assisting them to modify appropriately the educational environment.

The regional planning base will vary in size and scope across the state according to the needs of the area. For example, some school districts are capable of providing all services required for an appropriate program without crossing district boundaries or relying on the regional delivery system. In most cases, however, the provision of an appropriate program for severely handicapped, low incidence populations requires the coordination of all available resources, which would then cross district and regional lines.

It is critical, unless children are to suffer, that special education professionals not become enamored with the idea that ALL children are to be educated within the regular classroom, within regular campuses, within the local education agency.

Reality demands, however, from a legal, ethical, and professional standpoint that handicapped children not be denied access to the least restrictive alternative in which they can benefit.

The solution is a continuing balance between the assurance of a least restrictive educational alternative for every child and the assurance of an appropriately designed and implemented educational program. The least restrictive alternative must not be ignored in an effort to provide quality, nor must appropriateness be sacrificed to achieve community placement for severely handicapped children. Educators must constantly seek a balance.

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IMPLEMENTING PROGRAMS FOR THE MULTIHANDICAPPED RETARDATE IN A RESIDENTIAL FACILITY

Joe Kartye

In past years the multihandicapped retardate has been neglected both in public school programs and in residential institutions. Traditionally, these individuals have received custodial care, and some authorities in the field (Tredgold, 1956; Noyes, 1951) believed that these individuals were incapable of learning the most rudimentary of skills. Currently, this group comprises a higher percentage of the population of residential facilities than ever before (Tarjan, 1959; Pinder, 1968, Scheerenberger, 1976). Recent court litigation concerning education for the handicapped, aimed at both public school facilities and residential institutions, now require habilitation programs for this group. In addition, various agencies which accredit facilities for the mentally retarded have specified that all individuals, regardless of their level of competency, are capable of growth development and learning and should have an individual program plan designed to develop them to their fullest potential (ICF-MR Standards, 1973). Noncompliance with such standards may even result in the facility losing its accreditation, not gaining accreditation, or losing vital funds needed to maintain programs.

Fortunately, with this change in the attitude toward the multihandicapped mentally retarded over the past years, a growing optimism is reflected in the research related to the learning potential of these individuals and means for their habiltation. Psychology, through its behavior modification approach, advances in physical therapy techniques, and special education, has demonstrated the untapped learning potential of this group. Research and demonstration programs funded through state and federal grants-in-aid graphically demonstrate these individuals' potential for learning. However, the cost of implementing such programs in facilities without grant support may be prohibitive in terms of the amount of staff required to change the behavior of some of these residents and the amount of expenditures needed for sophisticated equipment and instrumentation to make these changes possible. Administrators at such facilities may find themselves in a dilemma: they know what should be done, they have the technical expertise necessary to get it done, they know the technology is available, but at the same time they do not have funds either through grant resources or through the institutions' financial systems to support the programs that they desire. The question then arises as to how to provide such programming for the multihandicapped without adequate funding and professional personnel? This paper seeks to explain how this problem was handled in one facility for the mentally retarded, Lufkin State School, located in Lufkin, Texas.

Administrative Problems

The first problem was to provide the program for the multihandicapped residents without adding additional staff at this facility. The solution to this problem, after securing the approval of the Superintendent and Assistant Superintendent, was to rely upon existing staff members and various professional disciplines for the technical knowledge necessary to develop, implement, and evaluate such a program. A committee of various professionals was formed and designated as the Multihandicapped Program Development Committee. It consisted initially of the Director of Programs, a registered nurse assigned to the multihandicapped unit, a physical therapist, a psychologist, a speech pathologist, a caseworker, behavior characteristics progression coordinator, a supervisor from the foster grandparent program, and the Director of Volunteer Services.

This group was asked to design a program which would provide for the needs of our multihandicapped residents in the areas of motor development, language development, sensory awareness, and social development. In meeting this objective, several questions had to be resolved. How would the program be administered? What would be the responsibilities of the individuals concerned directly with the program? Who would coordinate program activities? Who would train personnel working in the program? Who would train residents in the program? Who would write training activities for the residents? What types of individual program plans would be developed? How would the lines of responsibility and accountability be specified? How would the program be evaluated? How would progress of individual residents within the program be evaluated? How would skills residents acquired in the program be maintained in other areas? What steps could be taken on a routine basis to assure the program was proceeding as planned? What steps should be taken to modify the program? How would the schedules of the residents involved in the program be coordinated with other activities such as foster grandparents, volunteer services, recreation, etc.? Who would be responsible for the actual training of residents, since aide personnel, because of duties relating to physical care, feeding, and record keeping, did not have the time to devote to training residents in these additional areas?

It was decided that the committee would maintain the responsibility for determining broad program objectives, making major program changes, and evaluating the effectiveness of the total program, while each of the committee members were in turn delegated specific responsibilities. These responsibilities were delineated in organizational charts showing lines of accountability and responsibility. In addition to providing specific job descriptions for each individual on the committee, the actual resident training would be done by specially trained aides who would be called "training specialists." Once selected, they would also become members of the committee.

The Director of Programs was appointed as chairman of this committee and served as an interdepartmental spokesman for the program and was responsible for its overall productivity. He was also responsible for hiring and firing the training specialists and was the final arbitrator in cases of conflict in programming among committee members.

The registered nurse assigned to the dormitory in question was given responsibility for program coordination. Her responsibilities included reporting to the director on the progress and problems of the programming, assisting workers in everyday problems, and serving as the ultimate decision maker for selecting residents for the program as they were referred by the interdisciplinary team at this facility. She was also responsible for the direct supervision of the training specialists in the program, coordination of the activities of the training specialist with volunteers, foster grandparents, recreation, and other program areas on the campus; she also assured that dormitory aides maintained skills residents learned in the training program. This individual also scheduled residents for their training so as not to conflict with their other activities and recommended to the committee termination of any residents enrolled in the program whose progress was not satisfactory.

Curriculum supervisors were appointed from three areas: physical therapy, psychology, and speech and hearing. They were initially responsible for writing the curriculum and teaching individuals involved in the program, such as foster grandparents, volunteers, and the training specialists, how to implement the curriculum. They designed the behavioral objectives of each training program in the areas of motor development, social development, language development, and sensory awareness and were responsible for designing an assessment tool to evaluate the effectiveness of the program.

The caseworker on the committee was to provide feedback on resident progress to parents who were interested. She also was spokesman for the program to outside groups and initiated the purchase of specific materials or instruments that would be utilized only by a single resident in the program.

The BCP coordinator oriented the training personnel in the BCP assessment procedures. He also compiled the BCP assessments into understandable and meaningful terms and reported the findings to the program coordinator.

The training specialists were responsible for the day-to-day training of each resident involved in the program.

Once the administrative problems were solved, the next step was the determination of the number of residents to be included in the program, methods for their selection, and the selection of the actual residents involved. The interdisciplinary team referred more than 50 residents who they felt required services of a program such as this one. From these 50, 12 were selected by the committee on the basis of the probability of their success in such a program. In other words, only those residents deemed to have the highest probability of success were selected. The 12 residents selected were seven males and five females ranging from age 6 to age 18 and with social quotients ranging from 3 to 22. None were completely ambulatory and all possessed multihandicapping conditions such as epilepsy, cerebal palsy, etc.; all exhibited severe deficiencies in speech, ambulation, complete lack of self-help skills, poor motor development, and lack of awareness of their environment.

Curriculum Development

Once residents were selected for the program, the Behavior Characteristic Progression (BCP) was administered to determine the specific behaviors the residents lacked, a list wa made of these behaviors for each resident. Various developmental tests such as Gesell and Amatruda's Development Diagnosis, Denver Developmental Scales, Bailey Scales of Infant Development, and Cattell Infant Development Scale were surveyed to determine the developmental sequence of these behaviors. The behaviors were then arranged in a more or less developmental progression from most simple to most complex. Next, specific activities to teach each skill were designed. These activities were coded and placed on cards which specified the developmental tasks, the normative age that the task occurred in normal infant development, and the procedure to be followed for establishing this behavior in the multihandicapped child. (See example program cards from each area in Appendices 1, 2, 3, 4). In addition, the BCP strand related to this behavior was also specified so that the trainer could target the child on the BCP as she worked on a specific skill. These cards are now being modified somewhat to specify the criteria for learning the skill and for determination of when to go on to the next task. These activities were then categorized into the three areas of sensory-motor development, motor development, or social development. Whenever possible, the activities were taken directly from some published curriculum or work and were adapted to our target population. Sources consulted including Programming for the Severely Retarded, by James McCarthy; A Step by Step Learning Guide for Retarded Infants and Children, by Johnson and Werner; and Koontz Developmental Program, by Charles Koontz. Where no activity to teach this skill could be located, a task analysis was done on the skill in question and an activity was written in the same format as that used on previous activities.

Training Specialists

Three dormitory aides who were currently employed at the facility and who had demonstrated extraordinary ability in working with residents were placed in the position of training specialists and were trained by the speech pathologist, physical therapist, and the BCP coordinator. Their training was practical, on-the-job experience. For approximately two months, the three professionals worked with the training specialists from one to two hours daily until they demonstrated proficiency in scoring and administering BCP and in teaching the residents the activities as written on the resident activity cards. Subsequently, as each new activity was introduced, the trainer was supervised closely by one of these professionals to assure that he/she was teaching the activity correctly. These trainers recently completed a 35-hour training course in behavior modification which was designed by Luke Watson and described in his book How to use Behavior Modification with Mentally Retarded and Autistic Children.

Resident Training

Each of the three trainers worked with all 12 residents daily in 30-minute sessions on a one-to-one basis five days each week. One trainer worked primarily on language development, one on motor development, and one on social development activities; all three trainers taught activities from a sensori-motor development area. Activity cards for each area were followed in the training sessions. These activity cards tell the training specialist the objective of the activity, the normative age that the activity occurs in a normal development sequence, and the procedure to follow in teaching the activity to the child. A behavior is considered learned when the resident teaches an arbitrary criterion of 80% or more correct responses three days in succession. The training specialist also records data in each training session relating to the quality of the child's response on each trial. In addition, at the completion of the session, a brief narrative report concerning the happenings of the training session was completed. Sample activity cards for each area and data sheets can be found in Appendices 1, 2, 3, 4.

Once a skill is learned, the trainers have the responsibility to communicate the resident's success to other program areas in which the child might be involved. They do this by completion of an interdepartmental feedback sheet on which the child's name, name of activity, and his degree of competence in that activity are provided. This sheet is available to other individuals working with the resident so they can provide reinforcement for the child as he engages in this activity at other locations. Additional activity sheets are also provided to other program areas, such as the foster grandparents and recreation, so the child will receive extra practice in other locations on these activities so that generalization of skills will be obtained.

Program Evaluation

The multihandicapped program originated in February of 1965 and is still operational. During this period there have been two formal evaluations of the program using two entirely different evaluation systems. An evaluation was conducted following the first four months of the program utilizing the Behavioral Characteristics Progression (Santa Cruz Office of Education, 1973) scores on 12 strands of the BCP. Each resident was assessed on these 12 strands two weeks prior to the initiation of the program, and then was re-assessed each month thereafter for four months. Residents were assessed by the BCP coordinator, who was not directly involved in training the residents, although he was on the multihandicapped committee. Training specialists were given four residents each and were required to elicit the responses from their four residents on each of the 12 strands as the BCP coordinator observed and scored the residents' performance. The strands on which the residents were assessed are: Strand 12, Sensory Perception; Strand 13, Auditory Perception; Strand 14, Visual Motor I; Strand 16, Gross Motor I; Strand 30, Language Comprehension; Strand 11, Language Development; Strand 22, Listening; Strand 23, Adaptive Behavior; Strand 18, Prearticulation; Strand 53, Wheelchair Use; Strand 54, Ambulation; and Strand 55, Posture. Table 1 contains the scores of each resident during each monthly evaluation.

The scores represent the number of cells of progression on the BCP for all 12 strands combined. From this table it can be ascertained that all residents increased their level of proficiency in the areas assessed by these 12 BCP strands during the first four months of training. The increases ranged from a low of 9 cell increments to a high of 81 cell increments per resident.

A single factor repeated measures analysis of variance design (Weiner, 1962) was first used to determine the overall significance of these increments in BCP scores during the first four months of the program. The F ratio 11.75/3df was significant beyond the point .01 level of confidence. A Scheffe's test for multiple comparisons was used to determine the significance of gains between the various time intervals of the assessments (See Table 2).

It was concluded that although the greatest amount of progress occurred during the first month of the program, there was significant ($P<01$) progress for each month thereafter during the first four months the program was in operation. It was concluded that the program was successful initially in meeting its objectives of increasing the level of competence in the areas assessed by the BCP.

Upon reviewing this data, it was the committee's feeling, however, that the BCP, although a valuable instrument in program planning and determining resident's needs, was lacking in its utility as an evaluation tool. There are several reasons for this. The first concerns the time factor. It takes an inordinate amount of time to evaluate each resident individually on 12 strands with 35 to 50 responses which must be made on each strand, and it was felt by the committee there must be another way to acquire data concerning the program's effectiveness which would not be so time-consuming. In addition, it was felt that the great increase in gains in the February through March period could be at least partially attributed to the increased familiarity of each training specialist with the residents. In the February administration of the BCP, none of the training specialists had worked with any of the residents; because of this unfamiliarity, the residents' scores could have been somewhat lower than they would have been if they had been assessed by a person with whom they were familiar. This hypothesis becomes even more tenable when one inspects the data for the three months after which the training specialists worked with the resident; they increased rapport and possibly even improved their ability to elicit a desired response from a resident. Another factor which could influence the variability of the scores during the monthly evaluation periods is the reliability of the BCP itself. To date there is no published reliability study with this instrument, so it is possible that because of the lack of specific instructions for scoring each item on the BCP, the score variance could have been due to a lack of reliability of the instrument caused by differences in interpretation of the individual doing the scoring.

A more valid and less time-consuming evaluation could be obtained by simply listing all skills in which residents in the program would be trained and by periodically relisting to determine whether each resident could or could not perform a specific skill. The advantage of this approach is its simplicity and the decrease in the amount of time it takes to administer and score the instrument. The scale consists simply of 141 items in the areas of sensory motor development, language development, social development, and motor development, in which the residents are being trained (See Appendix 5). Although no one residents has received training in all 141 items, each resident has or will receive some training in all areas. This evaluation allows the determination of the number of behaviors learned by each resident in his training session. "Learned" means the number of behaviors in which the resident has reached the criteria for learning established in a specific activity. This instrument provides data for each resident regarding the number of behaviors learned, number of behaviors showing progress, and the number of behaviors showing no progress or regression. Residents were given pluses on each item on which they had successfully completed the criteria in the training activity. A zero was recorded for those behaviors which the resident had prior to his introduction in the program and a check mark was recorded for those behaviors in which the resident was showing progress in his daily training sessions, but had not yet reached the criteria for success set forth in the individual training activity. Information for these scorings were gained from inspection of the resident's individual training record. Once this was done, each resident was reassessed on all items in which he had scored pluses previously in the one-to-one learning situation, and if he could no longer perform that item, it was changed to a minus. From this data, it can be shown that during the past 18 months each resident has learned and retained an average of 22 skills, while losing approximately seven other skills, and each shows demonstrable progress in acquiring an additional 11 skills.

Although it was not done in this paper, it would not be difficult to determine from scores in each of the four areas of training in the program those areas in which the residents are progressing the most and those in which they are having the most difficulty. Also, the specific areas and skills in which residents need additional training once they are learned could be determined in order to maximize maintenance of these skills in their normal day-to-day environment.

Conclusion

Due to faults in experimental design of the study brought about by the necessity to work in a field type situation, and in the absence of control groups and sophisticated experimental designs such as multiple baselines, generalizations arising from this data are limited and should not be considered conclusive. However, it can be reasonably assumed that the program is meeting its objective of increasing the level of functioning of multihandicapped residents who in the past have been thought to be incapable of learning. More importantly, however, this paper demonstrates that one need not have a large staff rife with professionals, unlimited funds, and sophisticated equipment and instrumentation to program for the multihandicapped, although it cannot be denied that all of these could be useful. Hopefully this paper will benefit those in other facilities who are limited in terms of resources so that they, too, through co-operation, team effort, ingenuity, and careful planning, can improve the plight of the multihandicapped at their facility.

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Table 1

BCP Scores [a]

Residents	Feb.-Mar.	Mar.-Apr.	Apr.-May	May-June	Total
1.	17	9	9	2	37
2.	21	6	3	4	34
3.	19	2	1	0	22
4.	34	2	0	1	37
5.	11	17	0	0	28
6.	0	0	8	1	9
7.	48	7	2	1	58
8.	23	11	1	1	36
9.	15	10	2	1	28
10.	70	9	0	2	81
11.	0	9	2	4	15
12.	30	3	2	0	35

[a] Number of cells showing progression.

Table 2

Summary of Analysis of Variance of Residents BCP Progress

Source of Variation	SS	db	MS	F
Between Residents	999.5	11		
Within Residents	7623.5	36		
Between Times	3938.17	3	1312.72	11.75*
Residual	3685.33	33	111.68	
Total	8623	47		

* F=.99 (3,33)=4.44

Appendix 1

SENSORIMOTOR 2 BCP STRANDS: 23

DEV. TASK: The child is aware of his hand.

NORMATIVE AGE OF TASK IN MONTHS: 3

TREATMENT: Bring the child's hand in front of his face so that he can see it. Move his fingers, touch his hand to his face, or in some other way encourage him to notice his own hand. The child will bring his hand to his face and look at it for several seconds. He may turn it around to view it in several positions.

LANGUAGE 1 BCP STRANDS: 13

DEV. TASK: The child responds (eye movement) to the sound of a rattle or bell.

TESTING: Direct the child's attention with a puppet in one hand, ring the bell with the opposite hand. The child responds with eyeblinks, eye movement toward source of sound, or any other observable response. Child is reinforced with social or primary reinforcement.

TREATMENT: Play with child using noise makers. Let the child hold them and produce the sound. A rattle is good.

SOCIAL 2 BCP STRANDS: 23

NORMAL AGE OF TASKS IN MONTHS: 3

DEV. TASK: The resident's social response is accompanied by laughing and/or vocalization.

TREATMENT: Try several different sound activities for several days:

Hum to the resident.
Sing to the resident.
Rattle a rattler.
Play a musical toy.
Squeeze a squeak toy.
Play a record, radio.

If the child seems to enjoy a particular activity, repeat it several times and possibly several days.

Appendix 4

MOTOR 1 BCP STRANDS: 16, 53, 54

NORMATIVE AGE OF TASK IN MONTHS: 2

DEV. TASK: Child in prone position is able to turn his head from side to side.

TREATMENT: With child in prone position, lure him with a noisy toy or verbal stimulation to encourage the child to turn his head. Leave the toy in the bed to encourage the child to turn his head to look at the toy.

Appendix 5

MULTIHANDICAPPED PROGRAM

TRAINING EVALUATION

Resident ______________________ Date __________________

+ Behavior learned; - behavior no progress

✓ Behavior progressing; Blank if never attempted 0 exhibits behavior prior to training.

Sensorimotor:

____ 1. The child has reflex action grasp control.

____ 2. The child is aware of his hand.

____ 3. The child will feel and explore objects.

____ 4. The child's hands are engaged.

____ 5. The child has arm and hand grasp control.

____ 6. The child will put his hand to his mouth.

____ 7. The child will transfer an object from one hand to another.

____ 8. The child will try to reach for objects.

____ 9. The child can manipulate and retrieve a toy.

____ 10. The child can transfer and manipulate objects.

____ 11. The child can pat-a-cake with trainer.

____ 12. The child can clap.

____ 13. The child can manipulate rings on a stick.

____ 14. The child will imitate stacking of two blocks.

____ 15. The child can roll a ball.

____ 16. The child will put blocks in a box.

____ 17. Child puts objects in a container and takes them out of container.

____ 18. Child will put objects in a bottle.

____ 19. The child will put forms in a form box.

____ 20. The child can roll a ball back and forth with assistance.

____ 21. The child will pound an object.

____ 22. The child can stack objects.

____ 23. The child will build objects with blocks.

____ 24. The child will stack rings on a stack in the correct order.

____ 25. The child will play meaningfully with wooden puzzle.

Language

____ 1. The child responds (eye movement) to the sound of a rattler or bell.

____ 2. The child responds (head turn) to the sound of a rattler or bell.

____ 3. The child responds to the sound of music. Accepted responses are a decrease in ongoing activity, increase in ongoing activity, smile, laughter, or babbling.

____ 4. Child turns head deliberately to the sound of the noisemaker from each side.

____ 5. Opens and closes mouth in imitation.

____ 6. Presses lips together in imitation.

____ 7. Pucker lips together in imitation.

____ 8. Sticks tongue out in imitation.

____ 9. Points tongue up and down in imitation.

____ 10. Points tongue side to side in imitation.

____ 11. The child turns head to the sound of aide's voice.

____ 12. The child imitates any sound.

____ 13. The child imitates the vowel sound (a).

____ 14. The child imitates long vowel sounds.

____ 15. The child imitates consonent - vowel syllables.

____ 16. The child responds to name by looking up at the speaker.

____ 17. Child recognizes body parts.

____ 18. Child recognizes simple objects.

____ 19. Child imitates 2 syllables such as Mama, Papa.

____ 20. Child understands commands.

____ 21. Child produces selected words on imitation.

____ 22. The child produces selected words on command.

____ 23. Child follows simple directions.

____ 24. Child can name the parts of the body (5).

____ 25. Child can point appropriately to 6 different objects.

____ 26. Child can produce 6 different words meaningfully.

____ 27. Child uses inflexion in songs.

____ 28. Child recognizes familiar pictures.

____ 29. Child says the name of different pictures.

____ 30. Child accompanies actions with words.

____ 31. Child uses pronouns.

____ 32. Child produces pronoun/verb/noun sentences.

____ 33. The child describes familiar activities using pictures.

____ 34. Child counts to 5.

Social

____ 1. The resident will make some response to the aide.

____ 2. The resident's social response is accompanied by laughing and/or vocalization.

____ 3. The resident responds to the approach of the aide by reaching for him.

____ 4. The resident will imitate the aide's social and facial movements.

____ 5a. The resident will imitate the aide's gross hand activities.

____ 5b. Bang two blocks together.

____ 5c. Child will hit the xylophone.

____ 6. The resident will reach out to an offered object.

____ 7. The resident will take an object when it is offered to him by the aide.

____ 8. The resident will imitate the aide's patting hand over mouth, while vocalizing (Indian Fashion).

____ 9. The resident will imitate the aide's eye-hand peek-a-boo.

____ 10. The resident smiles selectively.

____ 11. The resident will pat-a-cake.

____ 12. The resident will make a specific, sustained effort to move toward the aide.

____ 13. The resident imitates toy play.

____ 14. The resident will imitate another resident.

____ 15. The resident will self-imitate meaningful play.

____ 16. The resident will roll a ball to the aide.

____ 17. The resident will sit at a table and play independently at parallel play, associated play, or domestic play.

____ 18. The resident will play parallel to others with toys.

____ 19. The resident will imitate and co-operate with the aide.

____ 20. The child will participate in domestic play in the form of a tea party.

____ 21. The resident will co-operate with the aide in play.

____ 22. The child will take a turn.

____ 23. The resident will share with another resident.

____ 24. The resident will look at pictures in a book.

____ 25. The resident will identify one picture in a book. (Example: "Find the ball.")

____ 26. The resident will turn pages in a book.

____ 27. Points to one named body part.

____ 28. The resident will mark on paper or scribble with large pencil or crayon.

____ 29. Resident will follow a one-step direction.

____ 30. Resident responds correctly to 2 of 3 requests: (1) "Give me ______.", (2) "Put ___________ in the ________.", (3) Put the _____________ on the _____________."

____ 31. The resident can turn the pages of a book.

____ 32. The resident will imitate marks on a piece of paper.

____ 33. Listens to musical instruments, including record player.

____ 34. Participates in floor play with blocks, etc.

____ 35. Resident picks up and puts away toys.

Motor

____ 1. Child in prone position is able to turn his head from side to side.

____ 2. Child has head control in prone position and is able to lift his head to the midline and clear the bed.

____ 3. Child turns head from side to side from a prone position.

____ 4. In a supine position, child has head control in moving head from side to side.

____ 5. In prone position the child has head control with his arms extended.

____ 6. In prone position the child is able to raise himself on his arms.

____ 7. The child will extend his arms in reaching for objects.

____ 8. The child can cradle sit.

____ 9. In a supine position, the child is able to raise his head.

____ 10. The child will pull to sit and will raise his head.

____ 11. Child can sit with minimum support.

____ 12. The child can roll over from a prone to a side position.

____ 13. The child can roll from a prone to a supine position.

____ 14. The child can roll from a supine to a side position.

____ 15. Child can pull to sit.

____ 16. The child can stand with maximum support.

____ 17. The child can sit with maximum self support.

____ 18. The child can sit with a minimum of self support.

____ 19. The child can raise his head from the mat in a supine position.

____ 20. The child can stand with minimum support.

____ 21. The child can sit independently.

____ 22. The child will pull himself to stand will stand.

____ 23. The child will pull himself to stand independently.

____ 24. The child will stand with two handed support.

____ 25. The child can stand with one handed support.

____ 26. The child assumes a knee hand position.

____ 27. The child can scoot.

____ 28. The child can crawl.

____ 29. The child from a sitting position, can pivot and go into a roll position.

____ 30. The child can operate a walker independently.

____ 31. The child can walk with two handed support.

____ 32. The child can walk with minimal support (one-handed support).

____ 33. The child can stand independently.

____ 34. The child can crawl up the stairs.

____ 35. The child can crawl down the stairs, feet first.

____ 36. The child can walk independently.

____ 37. The child walks up the stairs with maximum support.

____ 38. The child can throw a ball.

____ 39. The child can walk up the stairs with one hand held.

____ 40. The child can rock a horse with maximum support.

____ 41. The child can rock the horse with minimum support.

____ 42. The child can rock the horse independently.

____ 43. The child can walk down the stairs with maximum support.

____ 44. The child walks up the stairs holding the rail.

____ 45. The child can climb stairs independently while alternating his feet.

____ 46. The child can pedal the tricycle.

____ 47. The child can ride the tricycle independently.

TRAVIS STATE SCHOOL DEAF-BLIND, MULTIHANDICAPPED PROJECT: A HOLISTIC APPROACH

Jill Davidson

Travis State School is a Texas Department of Mental Health and Mental Retardation residential facility for retarded citizens. Under the supervision of the Superintendent and Assistant Superintendent, operation of the campus is implemented through the unit system. Each resident lives in a dormitory which is one of several assigned to a unit. There are currently five units, each of which has a director, an assistant director, a psychologist, a psychological assistant, a registered nurse, a licensed vocational nurse, two caseworkers, a program coordinator, and one or more activity therapists. Within each dorm is a dormitory supervisor and dorm parents. Other departments on campus, including the medical division, which is comprised of doctors and nurses, physical therapy, occupational therapy, a speech and audiology department, and the academic school department, also provide additional services to residents. The unit staff and representatives from many of these departments combine to form the interdisciplinary team which reviews and redesigns relevant programming annually and whenever else necessary for each client.

The Travis State School Deaf-Blind, Multihandicapped Project is part of the academic school department. In 1974 referrals from each unit housing school-age clients who had sensory impairments were submitted to the academic school. Academic school personnel and personnel from the speech and audiology department began gathering data, and an informal roster was compiled naming these clients as deaf-blind, multihandicapped individuals as defined in the Texas Education Agency's Bulletin 711 (Texas Education Agency, 1973). In September 1975 formal screening procedures were utilized under the direction of the academic school, speech and audiology department, and the Travis Office of the State Commission for the Blind. Sixty visually or auditorily impaired clients were initially considered as possible clients for a deaf-blind program. Twelve clients were immediately certifiable from data available on prior assessments. Forty-eight clients were screened using impedance audiometry techniques, and of these 48, 40 were administered an educationally oriented visual examination by an optometrist. This screening procedure identified 18 additional deaf-blind, multihandicapped clients. Certification procedures for these clients are currently being undertaken in accordance with guidelines established by Texas Education Agency and standards required by the Texas Department of Mental Health and Mental Retardation and the State Commission for the Blind.

These deaf-blind, multihandicapped, school-age individuals range from age 7 to 21 and are functioning at different levels in their physical, mental, social, and emotional systems of behavior (Hammer, 1974). Vocational potential, as assessed by project teachers, is varied from client to client (Table 1). Sensory involvement covers a wide range, but visual acuity is measured as 20/200 or worse in all clients. Auditory impairment is not certain, but several clients are known to have middle ear problems and others are suspected to have severe sensori-neural hearing losses.

After the identification process, these 30 clients were considered by the academic school personnel for current and future placement into a deaf-blind, multihandicapped project. The 12 certified deaf-blind clients were enrolled into the project in December of 1975. Eight clients were added in March of 1976. The last 10 clients are still enrolled in other programs on campus at Travis, but will be considered for placement when additional staff can be added. Assessment procedures of the deaf-blind clients are ongoing. The psychodiagnostic staff on each client's unit administers as needed the Vineland Social Maturity Scale (Doll, 1971), The Fairview Self-Help Scale (Ross, 1969), and the Weschler Intelligence Scale for Children (Weschler, 1955). Also, for assessing and programming, a behavioral characteristics progression profile (Santa Cruz County, 1973) is utilized. Additional educational assessments are administered, including the Callier Azusa Developmental Scale, a scale which was developed primarily for the use of teachers in observing behaviors which spontaneously occur in classroom settings (Stillman, 1975); the Teacher's Guide for Evaluating Visual Functioning (Efron & Duboff, 1975); and the Austin Prevocational Subscale, a checklist of behaviors which are commonly associated with the first stages of prevocational and vocational readiness in deaf-blind children (Stone & Ellsworth, 1970). These assessment tools provide information for writing relevant educational plans using the "Child as His Own Curriculum" (Hammer, 1974). The individual program plan utilized at the Travis State School Project is the model plan designed by the Texas Education Agency Regional Service Center for Services to Deaf-Blind Children (Texas Education Agency, 1975). Goals and objectives are designed for each child considering each of the following 10 areas: communication skills, physical development, orientation, mobility and independent travel, self-help skills, prevocational and vocational training, leisure time utilization, social-emotional growth and development, development of educational potential, family, parent and dorm parent training, and functional academic skills (Texas Education Agency, 1975). Two or more areas of emphasis are implemented into each integrated goal. This helps to insure horizontal as well as vertical development and safeguards against splintered skills (Stillman, 1975). Documentation records, which correspond to the goal by number, serve as lesson plans, Two types of sheets are used, depending on the construction of the goal. Task analysis type goals, for example, like dressing skills, lend themselves well to specific responses, for which a charting type of sheet can be used. Process goals like developing basic hand skills using a variety of methods and activities, on the other hand, can often be documented very well on an anecdotal type of record form describing approximations to desired goal in detail.

Table 1

Age and Vocational Potential in Deaf-Blind Multihandicapped Clients at Travis State School's Multihandicapped Project

	Age			
EDUCATIONAL SERVICES	5-11	12-13	14-21	Total
Full-time programming-- Clients with current prevocational and vocational potential[a]		5	5	10
Full-time programming-- Clients with possible future prevocational and vocational potential[a]	2		8	10

[a] Denotes assessments made by teachers.

The educational programs designed are implemented in the deaf-blind classrooms, on the client's dorm, in the gym, and outside. The classrooms are arranged into four areas in order to give physical cues to the child as to what is expected of him in each area. The project is currently utilizing two program constructs. Two teachers, two aides, and eight children with high potential function in a full morning program for three hours. A daily routine for observing and recording generalized and spontaneous behaviors has been developed (Ficociello, Mariani, & Burton, 1974). The routine follows this general format: Teachers go to the dorm and get the children. The child travels to the classroom as independent of adult assistance as is possible. He then participates in a motor sequence, either by being physically manipulated through the activity or by coactively imitating the adult model. Snack time follows, and the snack is utilized as a reward for signing behaviors or as a reason for teaching eating and drinking skills, depending on the child's own individual goal. Sensory stimulation, language development through the use of the trampoline, or a totally fun activity, such as fingerpainting, is then implemented, again depending on the child's individual goal. Structured activities, with the child sitting in a preassigned place, are implemented, performing activities such as sorting, peg board operation, and other visual motor, fine motor, and cognitive tasks. Other children, according to their goals, will take part in a structured play setting during which they are physically manipulated or are allowed to seek out objects and other children according to their own desires. The lunch program allows some children to get their own trays, their own eating utensils, pour their milk, and eat using appropriate skills. Other children are in training to learn to use their own spoon and to hold their cup. Tangible rewards such as light, color paddles, prisms, music, and vibration are utilized at many times during the daily routine (Writer, 1975).

The afternoon program serves 12 children who have been assessed by their instructors as needing shorter time blocks and intensive self-awareness training prior to enrollment into a full morning program. These clients are served in a one-to-one setting for one hour per day. Activities are designed to reach basic levels in sensory stimulation, body control, and pre-self-help skills. Progress has been exhibited by every child in the program, as is demonstrated in their last Callier Azusa evaluation and by their latest BCP profiles. These records are kept in individual school folders at the project site. The utilization of a holistic approach, rather than a strictly developmental or strictly behavioristic approach, has provided these clients an opportunity for development and growth not previously available due to their sensory handicaps. The personnel at Travis' project are looking forward to a rewarding and progressive second year in operation.

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TEACHING DRESSING SKILLS
TO A BLIND MULTIHANDICAPPED SIX YEAR OLD

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The need to develop training programs to teach basic self-care skills to mentally retarded persons is generally recognized by professionals (Horner & Keilitz, 1975). Several programs have been demonstrated to be effective in training various classes of self-care behaviors to retarded populations, e.g., programs to train independent feeding (O'Brien, Bugle, & Azrin, 1972; O'Brien & Azrin, 1972), toothbrushing (Horner & Keilitz, 1975), and toileting (Foxx & Azrin, 1971; Mahoney, Van Wagenen, & Meyerson, 1971). Training retarded persons in basic dressing skills has been mentioned as a prerequisite to successful toilet training (Foxx & Azrin, 1971), and simplified dressing programs are published in training manuals for parents of retarded children (Larsen & Bricker, 1968; Linford, Hipsher, & Silikovitz, 1972). However, the dressing programs which are currently available for persons interested in training retarded persons are limited by a lack of specificity in the description of the component behaviors in the dressing sequence and the lack of detail in the description of the training procedures. Literature pertaining to training blind retarded persons in self-care skills is difficult to locate.

In the present study, information presented by Larsen and Bricker (1968) and Linford, Hipsher, and Silikovitz (1972) was combined and modified to accommodate training a blind retarded child to dress himself. Five articles of clothing were trained in a backward chaining fashion.

Training sessions were conducted in the child's home to enhance generalization of the program results (Mahoney et al., 1971). In addition, the child's mother was trained to perform maintenance procedures in the normal living environment since the use of newly trained self-care skills is necessary for continued performance (O'Brien et al., 1972; Stolz & Wolf, 1969). Follow-up data were collected approximately one year after the study was terminated.

Method

Subject and Setting

The client was a 6-year-old blind, nonverbal boy who had been diagnosed as severely mentally retarded. He had been referred to the Drake University Center for Human Development in the fall of 1974 because of excessive self-abusive behavior. In the spring of 1975 the state welfare agency requested that the Center staff train the child in basic dressing skills. These skills were prerequisite for his participation in a toilet training project.

The sessions were conducted in a 4' X 6' cleared working area in the client's bedroom. The client sat on both the bed and floor during training. The therapist sat next to the client, within reach of primary reinforcers which were kept on a small table. A data recorder was also present during training sessions.

Recording

Incorrect Responses. All responses occurring during a session were recorded by the observer. Behavior that did not result in appropriate execution of the dressing steps (see Table 1) was scored as incorrect.

Prompted Responses. Behavior executed with the physical or verbal assistance of the therapist was scored as prompted. If the client failed to complete the step following a physical prompt, the response was scored as incorrect.

Correct Responses. Behavior which resulted in successful completion of the step and was executed with no physical or verbal assistance from the therapist was scored as a correct response.

Reliability. Reliability of recording was assessed by dividing the number of agreements between two independent observers by the number of agreements and disagreements, which yields percentage agreement. The mean reliability over the five sessions in which it was assessed was 94%.

Backward Chaining

To initiate training for acquisition of dressing skills, the entire sequence of necessary behaviors was broken down into smaller components. The final or terminal behavior was taught first, and then the step immediately preceding it was taught. This process continued until all the steps in the dressing chain had been acquired. Training began with the shirt so the client would eventually dress by applying his underwear, socks, pants, and shirt, respectively.

Shirt. The pullover shirt is the last article of introduced clothing in the dressing sequence. The behaviors needed to put the shirt on were also taught in steps, with the terminal step being taught first. This means the client was trained to pull the shirt over his head before he was trained to put his hand through the arm holes. (See Table 1 for specific response definitions and order of training.)

Pants. Following acquisition of the skills necessary for application of the shirt, sequence training for elastic waisted pants began. Again, the client was first taught the terminal skill in the chain needed for putting on his pants. (See Table 1.)

Table 1

Description of Dressing Steps

Shirt

1. Pull arms down and force shirt over head. The client is in a sitting position. His arms are straight above his head and through the arm holes. The shirt is gathered around his shoulder. When the client lowers his arms, his head protrudes through the neck hole.

2. Gather shirt and guide from mid-arm. The client is in a sitting position. His arms are through the arm holes and the shirt is gathered around his shoulders. The client raises his arms and puts the shirt on over his head.

3. Gather shirt and guide from waist. The client is in a sitting position. His hands are barely through the arm holes and the shirt is gathered around his forearms. The client raises his arms and puts the shirt on over his head.

4. Put hands through arm holes. The client is in a sitting position. The shirt is positioned on the client's lap with the waist hole toward the client's body. The hands are placed inside the waist hole, each hand touching one side of the shirt. The client slips his arms up through the arm holes, raises his arms, and puts the shirt on over his head.

5. Put hands through waist hole. The client is in a sitting position. The shirt is positioned on the client's lap with the waist hole toward the client's body. The client's hands are not in contact with the shirt when the trial begins. The client locates the waist hole with his hands and puts the shirt on.

6. Put shirt on from standing position. The client is in a standing position. The shirt is positioned on the bed with the waist hole facing the edge of the bed. The client's hands are not in contact with the shirt when the trial begins. The client locates the waist hole and puts the shirt on.

Pants

7. Pull up pants from mid-hip. The client is standing. His feet are through the pants holes and the pants are gathered around the mid-hip line. The client pulls his pants up.

8. Pull up pants from knees. The client is standing. His feet are through the pants holes and the pants are gathered around the knees. The client pulls his pants up.

9. Pull up pants from ankles. The client is standing. His feet are through the pants holes and the pants are gathered around the ankles. The client pulls his pants up.

10. Gather pants on legs and stand. The client is sitting on the floor. His toes are inside the waist hole. He pulls the pants up the legs until his feet are through the pants holes. He stands and pulls his pants up.

11. Put feet through waist hole. The client is sitting on the floor. The pants are positioned near but not touching his feet. He puts his toes inside the waist hole, pulls the pants up his legs until his feet are through the pants holes. He stands and pulls his pants up.

Socks

12. Pull up sock from ankle. The client is sitting on the floor. The sock is gathered around the ankle. The client pulls the sock up.

13. Pull up sock from mid-heel. The client is sitting on the floor. The sock is gathered around the heel. The client pulls the sock up.

14. Pull up sock from mid-arch. The client is sitting on the floor. The sock is gathered around the mid-arch. The client pulls the sock up.

15. Pull up sock from toes. The client is sitting on the floor. His toes are barely within the sock opening. The client pulls the sock on.

16. Put foot through opening. The client is sitting on the floor. The sock is positioned near but not touching the foot. The client locates the sock and puts his toes in the opening. The client pulls the sock on.

17. Repeat step 15 for training other sock.

18. **Repeat step 16 for training** other sock. Generalization should not be expected. Training on steps 12-16 may be required.

Underwear

19. Repeat step 11 for training underwear. Generalization should not be expected. Training on steps 7-11 may be required.

Socks. Skills needed for application of heelless socks were taught next. (See Table 1.)

Underwear. Skills necessary for underwear were taught last. (See Table 1.)

Procedure

Baseline. A 10-trial baseline for each clothing article in the dressing sequence was conducted. The therapist placed the client's hands on the clothing article and said, "(Name), put on your (article)." Responses were recorded as mentioned previously in the recording section.

Acquisition. Trainers performed three types of procedures: (1) no help, (2) verbal instructions, and (3) physical guidance and instructions. Physical guidance was used if the client failed to respond to a request to put on an article of clothing or if he attempted to respond but did not exhibit the proper movements for successful completion. Guiding the client through initial movements, when necessary, blocks acquisition of less successful behavior.

Verbal instructions were used when the client was being physically guided through movements and when guidance was no longer necessary. Verbal instructions were discontinued as soon as the client had exhibited the proper behavior at least once.

The "no help" procedure meant the client performed the proper behavior with neither of the training prompts (physical guidance and verbal instructions).

As acquisition training progressed, the number of training procedures applied to a step decreased. In this way, physical guidance and verbal instructions could be faded when they were no longer necessary.

Following step acquisition, the preceding link in the dressing chain was introduced. The criterion for step acquisition was defined as four out of five trials scored *correct* with no help from the trainers.

Each step was introduced by requesting the client to perform the appropriate skill, e.g., "(Name), pull down your shirt." Successive approximations to the correct response were reinforced with primary reinforcers paired with verbal commendation. Tickling and brief rest periods were also programmed. Dressing steps were trained according to the description and sequence represented in Table 1.

Maintenance. Each session began with a review of the dressing skills acquired during previous sessions. This assured further practice and continued performance.

The mother was also instructed in procedures for maintenance of acquired skills. Following successful training of a clothing article, the mother was instructed to reinforce the client when he successfully completed the behavior, but to no longer assist. If the client had trouble, they were to begin again. The trainers first modeled appropriate behavior and then observed the mother implement the procedure. Verbal feedback was introduced when necessary.

Follow-up. Follow-up data were collected 11 months after acquisition of the entire sequence of dressing skills.

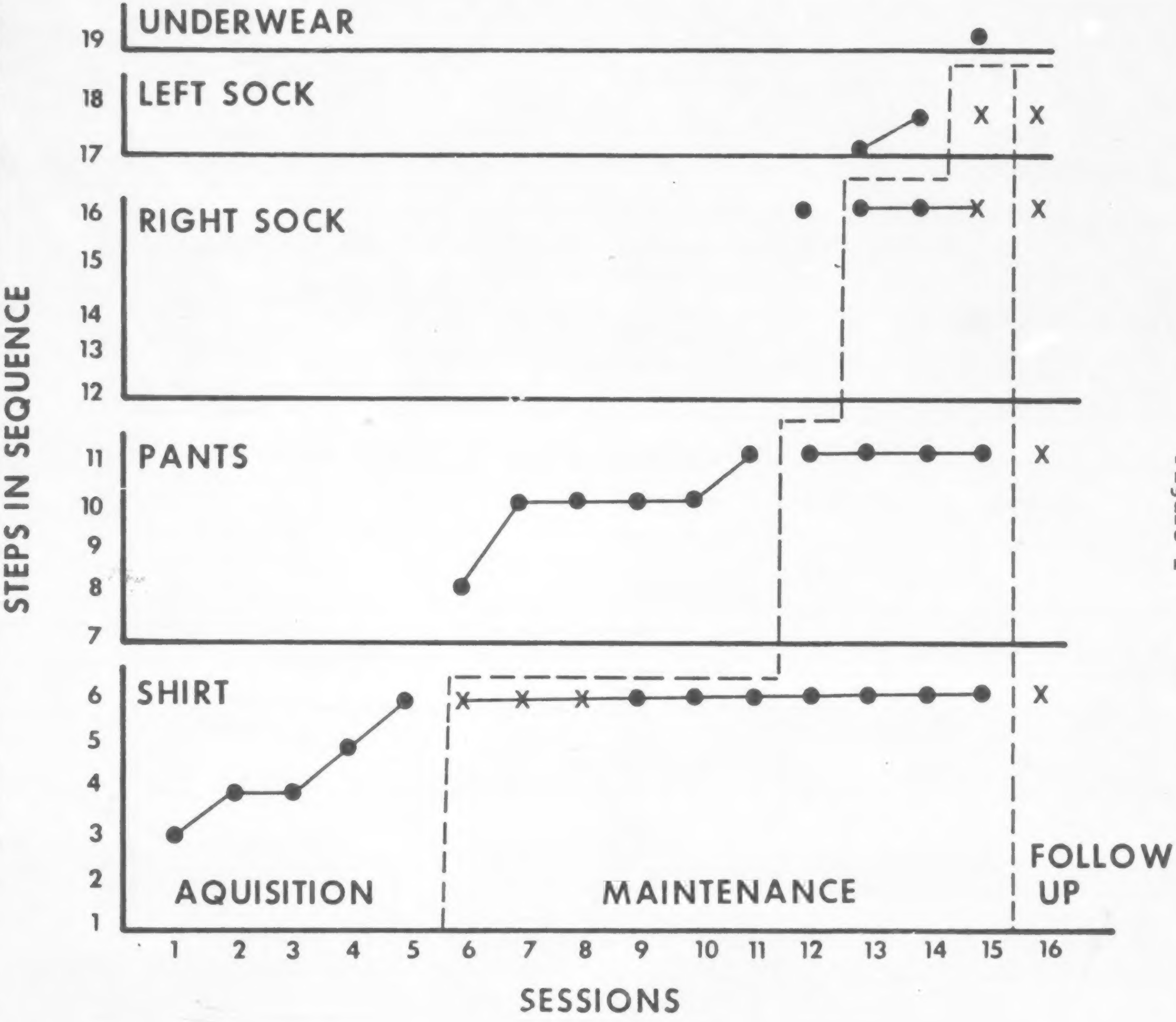
Results

During baseline trials the client failed to successfully put on any of the articles of clothing being used in training. Acquisition and maintenance training data are presented in Figure 1. The data in the acquisition phase represent the most advanced step in the dressing sequence which was learned to criterion (i.e., four out of five successful, unassisted trials) in each session. For example, the data point plotted on step three for the first session indicates that steps one, two, and three were all acquired to the established criterion during the session. Steps four and 11 in the shirt and pants sequence were the only steps that required training in more than one session before criterion was met.

The data in the maintenance phase of Figure 1 indicate the client successfully put on each of the clothing articles learned to criterion in a previous session. Typically, the review trials were conducted until the client performed successfully without prompts on four out of five trials. In several sessions, however, if the first review trial was correct, the rest of the review trials were dropped.

Figure 1 also presents data which were collected 11 months after the dressing training was completed. Adequate performance on each clothing article was maintained. These follow-up data are based on a single trial for each clothing article.

The number of trials which were necessary before the training criterion was met for each step of the dressing sequence is presented in Figure 2. For example, 172 trials were required to train step four of the shirt sequence, the step that first required the client to put his arms through the arm holes of the shirt. The client repeatedly put one arm through the neck hole until a smaller shirt was substituted for the original oversized shirt. The client's total sight deficit made steps six, 11, 16, 18, and 19, associated with loss of contact of each clothing article, difficult to acquire. For these steps the clothing article would be positioned near the client, but his hands or feet would not be in contact when the request to dress was given.


UNDERWEAR
LEFT SOCK
RIGHT SOCK
PANTS
SHIRT
STEPS IN SEQUENCE
19
18
17
16
15
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9
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7
6
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4
3
2
1
AQUISITION
MAINTENANCE
FOLLOW UP
1
2
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SESSIONS
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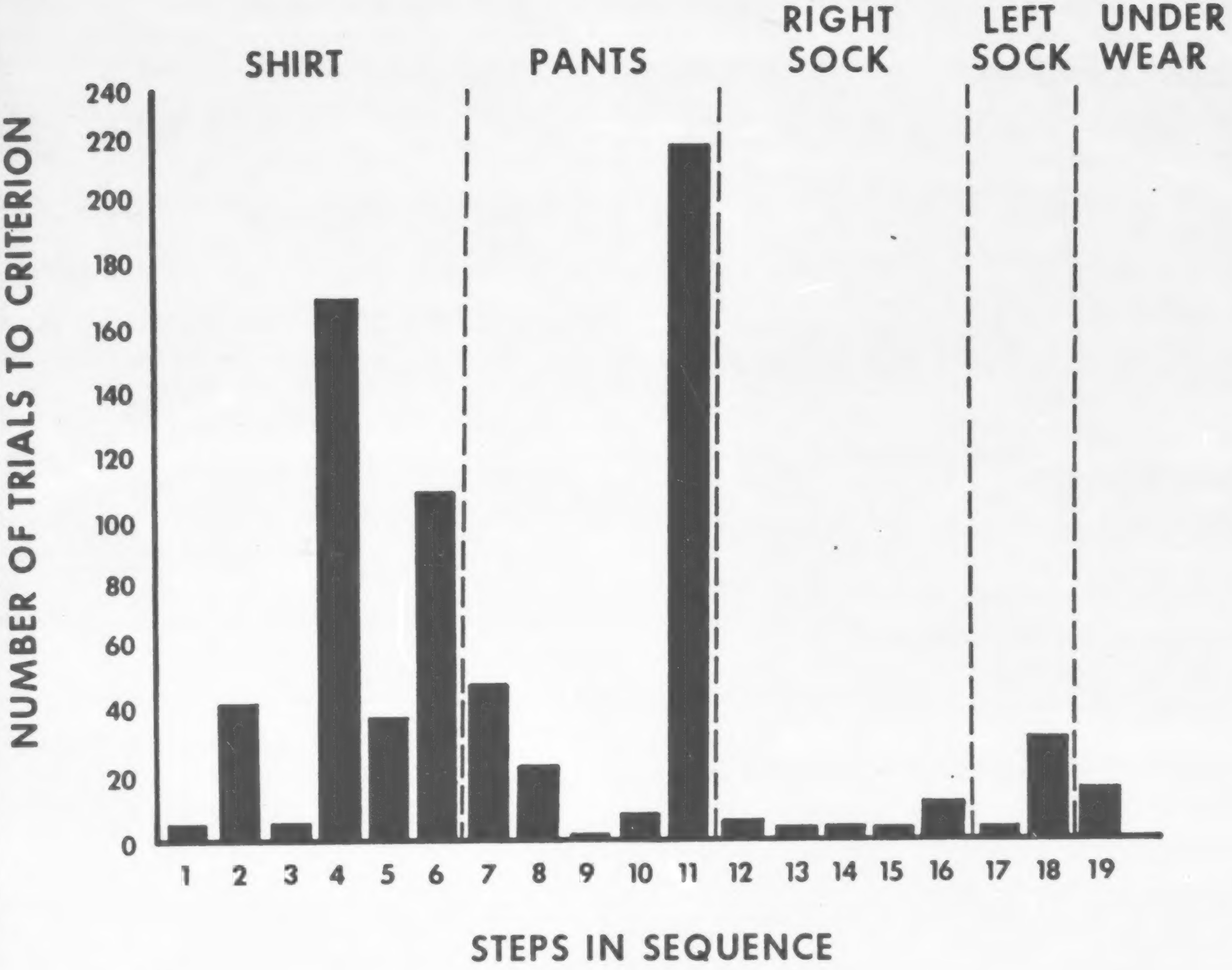
Figure 1


SHIRT
PANTS
RIGHT SOCK
LEFT SOCK
UNDER WEAR
NUMBER OF TRIALS TO CRITERION
240
220
200
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1
2
3
4
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6
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9
10
11
12
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14
15
16
17
18
19
STEPS IN SEQUENCE

Figure 2

During acquisition training for step 11 in the pants sequence, smaller elastic waisted pants were substituted for the original oversized pants. The client repeatedly put both legs in one pant leg, so a smaller size blocked the mistake.

Acquisition training was completed in 340 trials for the shirt, 344 trials for the pants, 77 trials for the two socks, and 15 trials for the underwear. Total session time was approximately 22 hours, distributed over 15 sessions in 10 weeks.

Discussion

The backward chaining dressing sequence presented by Larsen and Bricker (1968) and Linford, Hipsher, and Silikovitz (1972) can be easily modified to accommodate the blind multihandicapped.

The present procedure successfully taught the skills necessary for applying articles of clothing. The client usually wore pullover shirts, so training began with a shirt which was oversized, as recommended by Linford et al. (1972). As training progressed, it became apparent that the oversized shirt was allowing the client too much physical freedom, with a result of repeated unsuccessful attempts. Reducing the size of the shirt may have produced more discriminitive cues. It was observed that the client held both arms against the sides of his shirt when attempting to locate the arm holes. The oversized shirt made this maneuver awkward.

The client always wore elastic waisted pants, so training began with a pair which were oversized as recommended by Linford et al. (1972). When the client continued to repeatedly put both legs into the same pant leg, smaller pants were substituted. This may have facilitated discrimination of the leg holes.

Heelless socks were used throughout the study, which greatly simplified training.

Generalization of skills was apparent when training began on the second sock and when training began on underwear.

The follow-up data indicate maintenance of the dressing skills. In addition to exhibiting all the skills taught nearly a year prior, the client also had acquired the ability to put on tennis shoes. The mother reported she would always allow the child to dress without assistance. When the child did make a mistake, they would start over.

Future research should be devoted to developing steps for training that would enable the blind multihandicapped individual to exhibit even more extensive self-care skills. For instance, the individual could select clothes from a bedroom dresser and then put them on.

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LOOKING INTO THE FUTURE OF SERVICES FOR THE DEAF-BLIND

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It is often confusing to parents, teachers, and agency personnel to find that there are two federally funded programs aimed at serving the deaf-blind. There are the 10 regional centers for services to deaf-blind children and there is the Helen Keller National Center for Deaf-Blind Youths and Adults. Both of these programs are funded through the Department of Health, Education, and Welfare, but through different departments. The regional centers are funded through the Bureau of Education for the Handicapped, and the Helen Keller National Center is funded through the Social and Rehabilitation Service.

While there are two basic programs on the federal level, each has its distinct goal or objective. The regional centers focus on stimulating educational programs for deaf-blind multi-handicapped children, and the Helen Keller National Center's objective is to aid state and private programs in serving the deaf-blind youth or adult through social and rehabilitation programs. Both programs share a similarity of function in that they both act as funding agents for local service through the community and are capable of direct funding of state and local programs to serve the deaf-blind on a temporary basis, with the state education and rehabilitation agencies responsible for the ultimate sponsorship for these or similar programs. Both agencies seek to act as advocates for strong, on-going services for the deaf-blind of all ages. It can be seen that both programs are similar in many ways with the exception that one focuses on education and the other focuses on social and rehabilitation services.

Recently it has become a misconception to say that the two programs now serve different populations of the deaf-blind. In the past, the population has been divided into two main groups: the congenitally deaf-blind (rubella) and the adventitiously deaf-blind (Usher's Syndrome). More of the Usher's Syndrome deaf-blind are now being served by educational programs for the deaf and deaf-blind. This is particularly true in programs for the deaf which have instituted visual screening programs which we strongly advocate.

It has been estimated by McCay Vernon (1969) that 6% of the congenitally deaf population will be born with Usher's Syndrome, which is characterized by congenital deafness and progressive blindness through retinitis pigmentosa. The blindness can be diagnosed when a child is as you as 10 years old, and the National Center is getting referrals on many Usher's cases of people younger than age 21. These cases are being served in programs for deaf-blind children which previously served the younger rubella population.

In the meantime, the Helen Keller Center finds itself already working with many older rubella deaf-blind who were born before the main epidemic in '63-'65. It is also working with many older congenitally deaf-blind who have been institutionalized most of their lives for lack of any other available programming.

The Center does not serve all deaf-blind through its rehabilitation facility on Long Island. In the field, through its eight regional representatives, it serves on a consultant basis perhaps 400 deaf-blind persons at any given time across the nation. The Center's prime objective is to create an interest in serving the deaf-blind within its own state and communities wherever possible. It assists the states by temporarily funding such deaf-blind programs as the ones at Criss Cole Rehabilitation Center in Austin and the one at Arkansas Enterprises for the Blind in Little Rock. Each of these programs has a three-year limit to its funding through the National Center, at which time the local agency has the option to continue or discontinue the program and its funding.

For the Helen Keller Center, funding such programs is a relatively new aspect. It now funds approximately 14 programs across the nation and has on file another 20 applications to consider. It hopes to put itself out of business regarding serving the deaf-blind and to limit itself to serving only the most severely disabled deaf-blind who cannot be readily served in their own states.

Regarding the future of the Helen Keller Center, the Center has evolved several strategies for the future services for deaf-blind. These are my opinions, because it is difficult to predict the future of such a young agency.

1. The Center must truly know its population and its needs. Certainly the needs of the 0- to 3-year-old population are vastly different from the needs of the 16- to 21-year-old population. We must never assume that there is one recipe for programming for the entire 0- to 21-year-old population. The population consists of many subgroups, and each has its own need for programming. We must try to understand what each age group needs and where the emphasis should be.

2. The Center must begin to bring personnel from education, rehabilitation, and mental health mental retardation together with the parents who are involved so that they may meet face-to-face to discuss services for the deaf-blind. Our agency has co-sponsored such workshops in the past in other states and they have been very beneficial in terms of shared communication. We must let each group know the services the others are providing so that they may share and discuss.

3. Third, the Center must begin to work with our sheltered workshops, especially those for the blind, and include their representatives in statewide planning sessions. We must educate them toward working with the deaf-blind and provide support services which will help them feel comfortable in including the deaf-blind and multihandicapped within their services.

4. Last, the Center must begin now to look for future alternatives for housing and transportation services for our deaf-blind children. It is not enough to locate some form of employment or meaningful activity for these children; we must begin to plan for 24 hours a day of meaningful activity. We must plan services which will allow these children the total life skills they will need once they leave their parents and begin their own lives.

Though it is difficult to look into the future, these strategies may be the turning point in providing services to deaf-blind children.

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LEGAL AND ETHICAL ISSUES IN PROVIDING EDUCATION AND TREATMENT IN RESIDENTIAL SETTINGS

Reed Martin

The modes under which public institutions have functioned are slowly being changed: children once denied services are being granted access; those expelled because the institution could not deal with them are being retained; those institutionalized and forgotten are being returned to community and school; and those tranquilized are being treated by other means.

This has occurred because of unprecedented legal activism: judicial activism in expanding rights to children, students, patients, and other clients of mental health services; legislative activism as in the Education for All Handicapped Children Act, the Developmental Disabilities Assistance and Bill of Rights Act, and the recent Community Mental Health Centers Amendments; and executive activism in terms of regulations promulgated by agencies such as HEW on consent. The emphasis in this legal activity is clearly a federal emphasis and any service provider must be responsive to changes in federal definitions of consumer rights.

The most basic client right is the right to be left alone. Intervention to provide mental health services affects liberty sufficiently that the state cannot do it casually. It is vital not to involve the wrong person in services, or if treating a person for one legitimate problem to leave alone other problems. The state must intervene only after the potential client exhibits a behavior in which the state has a legitimate and substantial interest. That behavior must be manifested overtly and not be the figment of some diagnostician's enthusiasm.

When those working in publicly supported programs do intervene, the client must be accorded due process rights. Notice must communicate eligibility criteria and consideration of the client for special treatment. Notice must be given before information is gathered and each time a decision is made regarding the client. Consent should be obtained from one with capacity to consent, who consents voluntarily without any institutional coercion or implied threats, and who is actually informed of the course of treatment to be undertaken. Clients or their representatives who challenge the state intervention must be accorded a hearing forum with legal counsel, an expert witness of their own, opportunity to cross examine all relevant state personnel, a written verbatim transcript of the hearing, and an opportunity for further appeal.

If intervention is begun, it must follow an individual treatment plan developed in conference with the client which details in writing the client's needs, treatment goals and intermediate objectives, timetables for initiation and duration of treatment elements, relation of each treatment element to the goals statement, description of treatment personnel by qualification, a plan for use of persons from the normal environment, and the statement of objective criteria which will be used for evaluation.

Treatment must always be offered in the least restrictive environment appropriate to the client, and as there is progress, there must be re-evaluation of restrictiveness. There must also be periodic reviews of progress. Programs must be evaluated in terms of effectivensss -- output -- in meeting desired goals, and when periodic reviews show no progress the approach must be changed.

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